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ABSTRACT

This report describes the development of a project designed to enable high risk high school students to acquire the skills necessary to create computer art. The project was based on a perceived need for the development of a curriculum in computer graphics that would motivate high risk students to acquire skills that could lead to a long term advantage in the growing field of computer art and to continue in school until graduation. A unit of instruction in storybook design was developed using computer assisted instruction (CAI). Project specification sheets and performance checklists were given to each student along with performance objectives and a variety of pre-design layout samples. Students first sketched their ideas on paper, then transferred the design into the computer. An evaluation of the CAI course indicated that students completed their projects successfully and showed great enthusiasm throughout the process. Post-test results were so successful that an inservice teacher workshop has been held in order to perpetuate this course and to initiate the development of others like it. This report covers the analysis, design, development, implementation, and evaluation of the project, and copies of associated worksheets, questionnaires, and checklists are appended. (20 references) (DB)

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The Faculty of the
School of Media and Arts
of The New York Institute of Technology

accepts the
Thesis/Project

A LEARNING ACTIVITY FOR AT-RISK NINTH THROUGH TWELFTH GRADE STUDENTS IN CREATING A COMPUTER GENERATED CHILDREN'S STORYBOOK DESIGN

This project was conducted using the principles and techniques of instructional system design (ISD). The document is a report of the designer's plans and experiences in carrying out the design, development, implementation, and evaluation of the project. A plan, budget, analysis of findings, and recommendations are included.

written by

William Buchholz

in partial satisfaction
of the requirements for the degree of

Master of Science

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A LEARNING ACTIVITY FOR AT-RISK NINTH THROUGH TWELFTH GRADE STUDENTS IN CREATING A COMPUTER GENERATED CHILDREN'S STORYBOOK DESIGN

by

WILLIAM C. BUCHHOLZ

B.F.A., 1988, New York Institute of Technology

A THESIS/PROJECT

submitted to The Faculty of the

School of Media and Arts

of

New York Institute of Technology in partial

satisfaction of the requirements for the degree of

MASTER OF SCIENCE

in

TRAINING AND LEARNING TECHNOLOGY

June 2, 1991

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- William C. Buchholz

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CHAPTER ONE

INTRODUCTION

Overview

The world of art has grown and transformed the way we live since the days of Michelangelo and DiVinci. In today's market, the length of time in which to create art is as important as the art itself. To be competitive, art studios had to find new ways to meet deadlines of an already fast paced field. In the early eighties to help facilitate this challenge, art studios began to employ a new breed of artists, "computer graphic." Thus began a new era in the field of art.

In the early eighties, computer companies began producing better programs and more powerful computers for artists to use. The quality of these systems was getting as good as the field's standards. Expensive typesetting equipment was being replaced by affordable computer systems, cost and speed factors outweighed all others. Large expensive computers were available to studios, but most began with smaller less costly models. By the mid-eighties most art studios which had not switched over to some type of computer system had gone bankrupt. Other studios merged to create specialized art studios and design centers.

In the late eighties, art studios were employing a larger percentage of computer artists. Research shows that this demand was between twenty-five and thirty-five percent of all freelance artists. This demand grew considerably by the early nineties, when up to ninety percent of all freelance jobs were asking for some type of computer based knowledge.

According to Newsday, ("Job Trends", 1990) there is an increase in the job market for computer artists and for this reason it is important to advance the art curriculum of Farmingdale High School to include a course in computer graphics. This class would develop skills in basic computer functions and graphics, whereas, the students could continue on to pursue computer art on the college level. The computer art class would utilize the existing art curriculum using the computer as the medium.

Background

Farmingdale High School has two computer rooms, each is used intermittently. Each room contains twenty two IBM PC30s; one of these rooms is also equipped with mice. The school has purchased several graphic programs: Splash, which is excellent for graphic design and fine art; Print Shop, which is good for creating pre-designed banners and letterheads; and Ventura, which is a good graphics program but, difficult to operate. Farmingdale School District is in the process of looking into others: Correl Draw, which is the best on the market today but, does not network well; Express Graphics, which is good for creating pie charts; and Harvard, which is limited to creating bar charts. These programs are being used or considered because of the ease in use for the target population. Computer in art is designed to capture the student's imagination not frustrate them.

The target population consists of at-risk Farmingdale students which are in the ninth through twelvth grades and have completed one year of Studio in Art. The target population encompasses a large diversity of ethnic backgrounds. This diversity adds to the

endless possibilities of children's book story ideas. The students, however, are considered at-risk because of academic, economic, or social deficiencies.

Another program, which the Mechanical Drawing Department has been using is Computer Aided Design software, CAD. This program enables a student to draw floor plans and house elevations with computer speed and accuracy. CAD would be used in the computer class as an enrichment.

Statement of the Problem

Due to the increasing number of at-risk students in Farmingdale High, an instructional strategy for a curriculum in computer graphics had to be developed. The problem was to motivate the at-risk student to understand the need for developing skills which could lead to a long term advantage in the field of computer art. This motivation, would also help a student continue in school until graduation.

According to high school guidance counselors, many of these students were being swept aside as "problem" students and placed in study halls or other classes which were of no benefit to the student's interest. These students were not shown how to express themselves through the use of computer art. According to the designer's experience, vast amount of students believe that they can not create art, but when these same students are asked to create art using the computer they show no signs of hesitation. Computers in art help to spark a student's creativity, to explore many possible design solutions to an art project. With this

heightened awareness. At-risk students could utilize their time in high school creating ideas on the computer instead of sitting around waiting for study halls to end.

Purpose of the Project

The purpose of this project is to enable the at-risk target population to acquire the skills necessary to create computer art. Farmingdale High School is not presently producing students who can help fill the growing job market of computer graphics. Questions were raised: Should Farmingdale worry about this market and Why? After discussions with administrators and directors the answers were clear: Yes, Farmingdale should help contribute to this market. This job market is one of the fastest growing in the nineties. To ignore the statistics, would condemn Farmingdale students to the loss of a possible career in a creative job.

A unit of instruction in storyboard design was developed.The computer graphics unit, designed at Farmingdale would produce within a student the basic knowledge of computer functions. This allows the student an opportunity to pursue further study of the computer on a college level or a possible entry level position in an art agency.

Definition of Terms

1. At-Risk Students - Those students, due to academic, economic, or social deficiencies have a high probability of not completing high school.

2. Curser - The point which flashes on the computer screen

to indicate your location.

3. Hands-on learning - A practical experience, applied activity, simulation or laboratory activity in which students are actively involved in gaining and applying knowledge.

4. Students - ninth through twelvth grade students in Farmingdale High School, Farmingdale, New York. Also referred to as the target population.

5. Mouse - A device used to manipulate the curser on the computer screen. Plural - mice.

6. Icon - A simple graphic, illustrating a computer function.

Assumptions

1. That the students have completed one year of Studio in Art.

2. That the students have completed one year of an advanced art course.

3. That the students are demonstrating an interest in learning computer skills.

4. That a percentage of the student population is at-risk.

5. That the students will develop a stronger sense of self esteem and confidence within themselves and their computer skills.

Limitations

1. That the learning activities described in this project were designed for the target population in Farmingdale High School, Farmingdale, New York.

2. That the activities may not be suitable for other target

populations in another district because the students may not have the same backgrounds, weaknesses, and deficiencies that Farmingdale school students demonstrate the equipment: hardware and/or software, is not the same.

Method and Procedures

The method used to develop the learning activity and checklist is based upon instructional systems design (ISD). The method used to develop the learning activity was based upon a psychomotor approach which involved individual hands-on activities. The ISD model in common use today is the interservice procedures for instructional systems development (1976). The major instructional area was teaching the many functions on the computer. Based upon the students' retention of this new information, storybook design methods could be taught. The performance objective was to have the students design a six to eight page storybook.

To help facilitate the students, a project specification sheet and a revised performance checklist was given to each of them. (Appendix A and Appendix B). The project specification sheet served as an outline of the project. The checklist also gave the students structure, step by step procedures which allowed the students to work at their own pace. This checklist was revised only after a discrepancy in the steps of the procedures was discovered during the one-on-one field trials, the original performance checklist. (Appendix C). Students who completed a section sooner than others had time to go back to experiment with various design solutions. To teach the functions of the computer,

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the students must first be familiar with the computer terms and equipment.

The primary resource for the design of the learning materials was based on the instructional system design model. The five stages of ISD are: analysis, design, development, implementation, and evaluation. The instructional system design model in common use today, has envolved from the Interservice procedures for instructional system development (1976).

Analysis

The designer, a high school art teacher, conducted a needs assessment inventory in several Studio in Art and Advanced Drawing and Painting classes. The inventory was achieved through the use of a questionnaire. This was completed to determine if a need existed for a computer based art class. (Appendix D). A need did exist and to meet this need a computer graphics course and a goal was established. The goal was to design a class which would meet the basic needs of a student wishing to study computer generated art. This computer art class would give the student a basic understanding of the functions of the computer, whereas, the student could pursue further study in a college setting. Farmingdale High was already equipped with the appropriate computers, all that needed to be obtained were mice and the suitable program.

Design

The design stage involved several steps. First the designer conducted a task analysis, at which time the pre-entry level

skills of each student were established and performance objectives were written for each task. The performance objectives were grouped in the order most appropriate for a step-by-step completion of the task. Since the activity involved intellectual and psychomotor skills, the designer developed pre-instructional testing, and follow-up activities. A pretest was administered to the students to help evaluate their entry levels. (Appendix E). The design of the project would be based from the student's past knowledge of studio in art design techniques. The students would be instructed in the use of the computer in the area of design layout. They would have the benefit of seeing teacher and student storybook samples. (Appendix F). A variety of pre-design layout page samples were distributed to the students, but the students were instructed not to limit their imaginations to these designs. (Appendix G). The students were instructed in computer functions to keep consistent page layout designs.

Development

Hands-on learning activities require hands-on demonstrations. The students were shown a variety of printed teacher and student samples of book design and layout possibilities. It is important for the students to understand that there is more than one design solution to book design. Various ideas were shown to the students to help them formulate their own creations. After design ideas are sketched out with a pencil and paper and the student receives teacher approval, the student may transfer the design into the computer. This is a time consuming task which requires the

student's full attention to detail. When an exact representation of the student's sketch is drawn into the computer, the student is required to again obtain the teacher's approval. These teacher approval check points help the students stay on track with regard toward this project and allows the teacher close interaction to add positive reinforcements. After teacher approval and feedback a student continues to revise a design to a final finished product. Revision and adaptation continue in the classroom to upgrade the curriculum.

Implementation

The designer implemented the computer based art project by establishing the students' entry level behaviors. (Appendix H). The designer took a step-by-step approach to each lesson and procedure. Each computer icon was carefully explained and demonstrated to the students. It was then explained to the students what each student needed to accomplish and grading criteria. Storybook specifications sheets were distributed and thoroughly explained to the students. Although, the story line needed to be simple, it was made clear that this was more a design project rather than a writing assignment.

Evaluation

The formative evaluation consisted of a one-on-one trial, a small group trial, and a field trial. An evaluation checklist was utilized to determine whether or not the students were on track. The designer used feedback from the students to make a few modifications on the performance checklist. The evaluation was

conducted through both formative evaluation and summative evaluation. The formative evaluation was begun with a one-on-one trial. A small group trial was conducted followed by a field trial. The summative evaluation was based on the findings of the formative evaluation and the revisions of the materials which were indicated.

Summary

Because of a changing world market, a growing demand for highly trained computer artists exists. A needs analysis of the art program at Farmingdale High School was conducted and it was determined that a need for training in computer graphics did exist. This training would include the use of computers in the art studio, now the computers are changing the art studio.

The decision to create a computer graphics course was enhanced by the fact that most of the computer equipment already exists at Farmingdale. It was just a matter of developing the proper curriculum.

A broader population of Farmingdale students would have a greater opportunity for employment if the computer graphic need was met. Students would also build a solid base in computer graphics to pursue further study at a college level. Several colleges have made presentations to the Farmingdale art student body and have stressed a need for the students to obtain any training in computer graphics.

At-risk students will obtain usuable skills and

self-confidence. This developed self-confidence would contribute to the students' awareness of the importance of completing high school and seeking gainful employment.

CHAPTER 2

ANALYSIS

Introduction

Analysis is the first stage of the procedural system which involves the response to human resource requirements. There are three steps which must be conducted.

First, a needs analysis must be conducted and questions asked, such as: Is there a need for instruction in computer based art? Can the goals of future artists be achieved without the use of computers?

A job analysis is the next step to be conducted. This is accomplished by using the present materials and feedback from the learners. The instructional nneed is then converted into a group of smaller tasks. In this project the designer used library and teacher created samples of computer generated books for the presentation, and questionaires, surveys, and checklists for feedback.

The third step is to conduct a task analysis in which the designer chooses the tasks which are needed for instruction. Each task is broken into a series of steps that will complete the task. The prerequisites and entry behaviors, along with the required attitudes are all identified. These questions are answered in detail on the following page.

Needs Analysis

In order to make sure there was a need for instruction, a needs analysis was conducted. Determining the instructional need for teaching computer graphics at the high school level was in

direct response to a growing need from the business field of art and student awareness of future careers in art. Interviews outside of the school with various art studios confirmed the need for the students to have a background with using computers to create art. A creative director mentioned that a studio runs more efficiently when creating images by computer. If any additional changes need to be made for a client's approval, they are completed quickly by way of the computer. Paul Anzalone, an art director at Paul Anzalone and Associates, an art studio located in Huntington, New York, had mentioned that while it is very rare that a high school student is hired directly into a studio, it is important for the student to be educated in the use of computers before entering an art college. Art colleges, such as, the School of Visual Arts (SVA) and the School of Communication Design at Fort Landerdale have confirmed this by making presentations to the students and stating that it is important to have a background in computers to generate artwork.

Due to the increasing number of "at-risk" students in Farmingdale High, an instructional strategy for a curriculum in computer graphics must be developed. The problem: to motivate the "at-risk" student to understand the need for developing skills which could lead to a long term advantage in the field of computer art. This motivation, would also help a student continue in school until graduation. According to research, students working successfully with computers would build a student's self-esteem. This self-esteem building would be part of the solution to the "at-risk " student. A computer art class designed to enhance the

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student's motivation and self-esteem will undoubtedly help a student graduate high school.

Many of these students are being swept aside as "problem" students and placed in study halls or other classes which are of no benefit to the student's interest. These students were not shown how to express themselves through the use of computer art. According to this designer's experience, a vast amount of students believe that they can not create art, but when these same students are asked to create art using the computer they show no signs of hesitation. Computers in art help to spark a student's creativity to explore many possible design solutions to an art project. With this heightened awareness, "at-risk" students could utilize their time in high school creating ideas on the computer instead of sitting around waiting for study halls to end.

Job Task Analysis

The task analysis of the instructional program was conducted. Five main tasks were indentified as requiring instruction. The tasks were identified based on the entry behaviors. The tasks were arranged based on a sequential order from the concrete to the abstract material. They are as follows:

1. Computer Functions
2. Story Creation
3. Book Design Sketches
4. Converting Pencil Sketches into the Computer
5. Book Binding Requirements

Target Population Analysis

The need at Farmingdale High School is to motivate and build the self-esteem of the "at-risk" students. This target population of "at-risk" students are 9th-12th grade students who have successfully completed one year of Studio in Art and one Advance Art course.

Organizational Constraints

The district was very cooperative and the only constraint placed upon the designer was the type of software used. The designer could only use software which operated within a network. The reason for this was cost factors. The cost of a program using network fees is much lower then purchasing twenty-two individual copies of the same program.

Instructional Goal

The instructional goal is for the students to create a computer generated children's storybook, using the existing computer technology at Farmingdale High School. The purpose of this computer based art project is to help meet the growing needs of our society which are: keeping high school students from dropping out and create knowledgable students who can contribute to our society. Farmingdale High School is not presently producing students who can help fill the growing job market of computer graphics. Questions are raised: should Farmingdale worry about this market and why? After discussions with administrators and directors the answers were clear: Yes, Farmingdale should help contribute to this market, because according to Newsday (1990), this job market

is one of the fastest growing in the nineties. To ignore the statistics, would condemn Farmingdale students to the loss of a possible career in a creative job. To help facilitate motivation and self-esteem building, the designer has developed a research project on children's storybook design to help these students succeed. The computer graphics unit, designed at Farmingdale would produce within a student the basic knowledge of computer functions. This would allow the student an opportunity to pursue further study of the computer on a college level or a possible entry level position in an art agency.

Literature, Existing Course, and Material Review

For the purpose of this project, literature was defined as textbooks providing resource information on the topic. Materials were defined as instructional materials usable in a classroom situation.

Before beginning the instructional design, it had to be determined that materials meeting the instructional need were not already in print. Since all instructional materials were actually created by the designer because of the "newness" of the program it was determined that the storybooks which were created for student use was acceptable as instructional material. The library samples used as research would be used as sample ideas only and to be treated as copyrighted material. The students were encouraged to locate their own researched story book layout design ideas.

A search on ERIC (Educational Research Information Center)

database, proved to be a limited source of information, any articles provided were obsolete for this designer's purposes. The existing literature was located through local libraries and educational professionals.

After carefully researching the topic of computer assisted art, the conclusions, which are also drawn from the observations of the students using the computer, shows that students who learn with the computer have a stronger sense of self-esteem. Eight articles defined as literature were indentified by the designer as appropiate to the topic:

(1) Lowe, Janis, L., (1990), Building Self-Esteem - Computer Style, Teaching K-8. October, 69-70. According to the article, Pride and Self-Esteem, were characteristics which blossomed when students were given responsiblity for teaching each other. This is important because not only does it demonstrate building a student's self-esteem but also of mastery learning. The article also mentions how the students enjoyed learning from the computers.

(2) Salomon, Gaurriec, (1984), Computers in Education: Setting a Resesarch Agenda, Educational Technology. October, 12-20. The ideas in this article coincide with the ideas I have for my research proposal: Computers in Art Education. The article raises several major points.

The major points of the article are: what are the long-range effects of computer use, are studies being conducted now or will they, like television, be conducted much to late. What studies are being conducted on the cumulative effects of cognition,

emotion, and behavior. Another point brought up was an issue of transfer of learning from one contexted to another. do computers enhance this or not. A final point to the article was the role computers in education should play. The article states: that the role depends on the quality of the software and that to make full use of computers, schools must radically change. Most schools, the article continues, are quick to adopt new technologies only to find them collecting dust at a later date.

In conclusion, this article asks, what computer issues are being researched? How will computer usage effect the cognitive and social aspects of a future generation? The effects of computers on student behavior and life will be an important aspect of my research proposal: Computers in Art Education.

(3) McClain, Martha, (1989), Students Make Their Art Glow, Arts and Activities. November, 19-21.

This was a very informative article. It is about an elementary school in South Carolina who has adapted computer applications into their art curriculum. The article discussed how the teacher developed growth in the students at that level.

The author discusses how the computer helps motivate the students to create art. In teaching the students it is important to teach the basics slowly in the beginning. This will help reduce the possiblity of student failure. Later, when the students are using the menus, it makes an excellent opportunity for the teacher and student to experiment with design ideas.

Students plan their designs in crayon, as homework, then in

class they are allowed to draw their designs with the computer mouse. The subject class, in this article studies from books and famous illustrators, this is known as referance material and is a very important part of the learning experience. Teaching the basics in design techniques is sometimes more effective by using the computer.

Computer art allows a student time to experiment with a design after the orignal has been saved. The teacher may show a student effective design solutions without leaving the teacher's imprint on the student's work. Computer art may also be hung in several places at the same time; i.e. administrative offices and an art show.

(4) Andris, James. (1989), Exquisite Tools Exquisite Art: Digitizersand Paint Programs.School Arts. December, 17-19.

This article was based off of three recent developments. Each of these developments will expand the computer art field.

The first development is one which extends memory, sound, and graphic capabilities. This allows the use to easily import images from a variety of sources. The second development is digitizing an image. This image may be imported from videos or compact discs. And finally, paint programs which allows the user to create and modify visual images within the microcomputer.

Digitizers and scanners are common now and are the best source for images. They are remarkably flexible. The visual images produced can exceed the standard for television and may be significantly altered.

Paint programs offer tremendous control in creating images while using a modest amount of time and energy. The range of functions are: file mangement, drawing tool, edit, palette, options, and text. These features truely enhance the final creation. These processes can produce immediate rewards and almost all actions are reversible.

(5) Robertson, Elizabeth, B., (1990), Enhancement of Self-Esteem Through the use of Computer-Assisted Instruction, Journal of Educational Research. May/June, 314-316.

Evaluating the effects of computer-assisted instruction on the learner's self-esteem. Over 1,000 students participated in this study. According to the findings, students completed pre- and post-test questionaires both of which included a scale to measure self-esteem. Students who were exposed to the experimental treatment, (computer-assisted instruction and subsequent computer related handouts), scored significantly higher on self-esteem than did the control group (no computer-assisted instruction).

(6) Luenrmann, Auther, (1990), Don't Feel Bad About Teaching Basic, Learning About Computer Awareness, Literacy and Progress. May 61-63.

This article states that students are taught the basics slowly in the beginning to reduce the possiblity of failure. Because of this philosophy, students are highly motivated to try different ideas when creating their art work. Also because of the save feature on the computer, the students are more apt to experiment with their designs, something which is almost never done when

creating art in a traditional manner. A student using the computer can save their work, call it back up on to the screen and continue to make changes without any fear of destroying the original.

(7) Hein, Kristen, (1990), Multimedia Package Sparks Student's Imagination, T. H. E. Journal. August, 34-35.

Further research finds articles discussing student self-esteem being enhanced by the fact of being computer literate. Since only a few students have mastered computer literacy, it is something to be proud of. Students imaginations are being sparked by multimedia packages. Students are taking the initiative to try new ideas. This type of motivation is sort after from every school discipline. According to the research findings, a student's self-esteem and motivation are significantly enhanced through computer-assisted instruction.

(8) Welter, Cole, H., (1989), Art and Computers, Arts in Education. December, 18-22.

This article discusses the importance of computers in art education and the enthusiasm the children exhibit while creating art with computers.

On the basis of these articles ans studies it is clear that computer based art instruction can enhance a student's motivation and self-esteem.

Plan for Project

Estimated Student Effort

The estimated student effort was fifteen hours, divided into twenty forty-five minute classes for each student to have a

complete understanding of the project facing them. An estimated 14 to 16 additional forty-five minute classes are needed to complete all of the book design and binding requirements. The slow learners would be assisted by the faster learners as they completed their projects.

Project Plan

The project was planned for twenty forty-five minute periods using time-line, PERT, and Gant charts to indicate the timing and correlation of various activities. Kirkpatrick (1976) indicated that the PERT chart is used to reduce delays and conflict of parts of the overall plan. See Appendix K for the project planning chart.

The first step, needs assessment, began on January 15,1991. The last step, summative evaluation and final report, was completed on April 15, 1991.

The designer used a PERT (Program Evaluation and Review Technique) chart to locate any time conflicts and unnecessary interruptions. The PERT charts were followed closely in order to meet the projected end date.

The learning activity took twenty forty-five class periods plus a fifteen minute prep time period. Grading and evaluation of the student's work required two weeks. The learning and teacher book samples consisted of teacher-made materials.

Budget

The budget for the instructional program was based on the acquistion of learning and the prorated salary was based on instructional time at $35.00 per hour. The learning activity

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took twenty forty-five class periods plus a fifteen minute prep time per period. Grading and evaluation of the student's work required two weeks. The learning and teacher book samples consisted of teacher-made materials. See Table 1.

This grand total, $5,575.00 does not take into consideration any computer equipent: IBM PC, mice, monitors, Splash Programs, and printers. Since this equipment already exists at the school, their cost was not calculated into the grand total cost of this project. If this equipment was not available, the cost of this project would greatly increase. The cost of revisions was not calculated into the overall cost of computer training because the designer utilized the expertise of fellow teachers and subjetc matter experts.

Summary

The designer conducted a needs and task analysis, and established the need for instructional material to be developed for computer generated children's story books which formed the basis for this project. The instructional goal was formulated and instructional events were developed within the domain of the intellectual learning.

The target population was analyzed and their characteristics studied. Prerequisites and attitudes were assessed. As a result of the target population analysis, the designer identified the instructional goal.

Table 1

Budget for Instructional Program

Expense	Designer Hours	Cost	Subtotal	Total
Labor @ $35.00 p/hour				
Analysis	15	$ 525.00		
Design	25	875.00		
Development	35	1,225.00		
Implementation	30	1,050.00		
Evaluation	30	1,050.00		
Total Labor			$4,725.00	
Materials				
Teacher Book Samples		$ 100.00		
Classroom Supplies		200.00		
Computer/Coping Services		500.00		
Misc		50.00		
Total Materials			$ 850.00	
Grand Total				$5,575.00

The target population was analyzed and their characteristics studied. Prerequisites and attitudes were assessed. As a result of the target population analysis, the designer identified the instructional goal.

Existing literature was reviewed. Five main tasks for teaching computer generated art were further identified, each supporting the instructional goal.

A time line was developed and closely followed in order to meet the projected end date. A budget for the instructional program was estimated.

CHAPTER 3

DESIGN

Introduction

The second phase of the instructional system design is the design stage. In the design stage, it was decided what materials, knowledge, and attitudes will have been developed at the end of the instructional process. It is at this point that entry level behavior, learning objectives, and test items are developed. Performance conditions and criteria of learning objectives were stated with measurable results demonstrated. The objectives were listed in sequential order and the instructional plan was the final stage of design.

Instructional Task Analysis

Instructional analysis breaks down an instructional goal into the subordinate skills the student will need to achieve the goal. This process is critical to the design of instruction because the designer can identify the skills needed by the student to achieve the objective. The first step is to classify the goal according to the kind of learning that will take place (Dick & Carey, 1985). After the learning has been classified the second step is to analyze exactly what tasks the student will be doing when performing a goal (Dick & Carey, 1985).

Intellectual skills are those that require the student to do some unique cognitive activity. Two types of intellectual skill needed by the student were concepts and problem solving (Dick & Carey, 1985). A psychomotor skill requires a student to use

cognitive and motor activities to achieve individual tasks.

The instructional analysis of the goal is an intellectual skill as well as a psychomotor skill. The students will learn the functions of the computer to create a children's storybook. In addition to computer operation, the students will use intellectual skills of concepts and problem solving in determining the design of their storybooks. The media selected for instruction was determined through the use of Anderson's (1983) media selection charts. The learning objectives were achieved by using printed materials and the computer both requiring psychomotor skills. Library reference materials were also used. The students intellectual skills gained in Studio in Art and Language classes were used to create the story idea.

A procedural analysis of the intellectual and psychomotor skills consisted of:

1. looking at the individual learner's entry level

2. selecting an appropriate, discriptive, instructional goal, and

3. analyzing the subordinate skills required to perform the instructional goal, and

4. breaking it down into sequential steps with each one related to the objective and also a prerequisite for the next step. See Appendix K.

In the instructional task analysis the knowledge and skills needed to perform the tasks in each goal that will be taught in the instructional module must be identified. For each task, the question was asked, "What does the student have to do to perform

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this task?" The appropriate subtasks are identified for each task.

Instructional Objectives

An objective is a description of a performance the designer wants learners to be able to exhibit before considering them competent. The objectives are organized in the form suggested by Mager (1985). The objective describes the intended learned behaviors of instruction rather than the methods and processes of the instruction itself.

A given behavorial objective produces a list of sequential components. These components when combined create the instructional steps needed to complete the project successfully. The three parts of an objective are performance, conditions, and criteria. A behavioral objective can be defined as observable behavior, also referred to as performance. The conditions include the learning setting, what materials are distributed to the learner, and what kind of time frame the learners must complete the project in. The criteria is the percentage of accuracy with which a task is completed. The designer had identified twenty-four objectives which correspond with seven learning objectives.

Seven main learning objectives were identified as necessary to master the goal. The learning objectives are:

1. Manipulation of the computer mouse, rolling, dragging, clicking, and double clicking.

2. Accessing the computer files, positioning the arrow, openning and closing the file, and naming the file.

3. Writting the story, which would include the introduction, body, and story conclusion.

4. Designing the storybook on the computer, which would detail the requirements of: size, color, type usuage, fly sheet page amount, and illustration specifications.

5. Printing the storybook, printing requirements would be stipulated.

6. Coloring the storybook, coloring requirements would be outlined.

7. Binding requirements would be confirmed with the students with relationship to assembly.

Entry Behaviors Defined

The entry behavior aspect of the task analysis concentrates upon the learner as presented for instruction. The instructor must consider the following requirements, the student completed the prerequisite Studio in Art and Advanced Art class. The student is a Farmingdale 9th-12th grade at-risk student. The student demonstrates artistic ability. The student generates a general interest in the field of computer generated art. The student possess the skills to function with a mouse or keyboard (a keyboarding class is not a requirement).

Group and Sequence Objectives

The seven instructional objectives correspond to the seven main tasks. These tasks were placed in proper sequential order when they were written in the design stage. Each of the main objectives are grouped according to each subjectmatter. It is obvious when the student manipulates the mouse, the student would acquire the skills rolling, dragging, and clicking. When the

student accesses the file, the student would acquire the skills of naming the file and openning and closing. The student would utilize previous acquired and langauge skills when writing the story and all of the parts. As the student designs the storybook the student would gain knowledge of design techniques, tyopgraphy, and illustration capablities. The student would also gain knowledge in printing, coloring, and binding techniques.

Each of these main objectives have subskills which help the learners achieve a complete understanding of the functions of the computer. The instructional objectives are arranged in a logical order which helps the students develop more difficult skills as they progress throughout the project.

Learning Activities Specification

Specific learning activities are related to each instructional objective. These learning activities must be completd within the daily forty five minute class periods. According to Gagne (1985), nine internal processes were indentified during learning. External support for the internal processes are the instructional events. A complete lesson plan is made up from these nine instructional events. The internal process is compared to the lesson plans and instructional events.

The computer based book creation was the basis for the lesson plans. The structure for the lesson plans, following Gagne's internal processes, and including methods and media, are summarized in table 2.

Table 2

Relationship of Methods and Media to Internal Processes

Internal Process	Method	Media
1) Reception	Pretest	Printed Materials
2) Expectancy	Lecture	Printed Materials
3) Retrieval to working memory	Question and Answer	Keyboard/Computer
4) Selective Perception	Lecture Question and Answer	Printed Materials
5) Semantic Encoding	Lecture Examples	Printed Materials
6) Responding	Self-paced	Printed Materials
7) Reinforcement	One-on-one	Printed Materials
8) Retrieval and Reinforcement	Self-check Display work	Printed Materials Art Gallery Show
9) Retrieval and Generalization	Post test Class discussion Spaced reviews	Printed Materials

Assessment System Specification

Assessment is continuous throughout the entire computer generated art project. At the time of instruction, learning will be measured. Assessment will start with a student's entering behavior, followed by instruction, ending with the evaluation of observable change in student behavior. In the designer's program there are several check points with which a student must obtain the teacher's approval. This is to determine whether the student is acquiring the

learned behaviors necessary to continue the project successfully.

Evaluation System Specification

There were two types of evaluation used for this computer based art project. They were the formative evaluation and the summative evaluation.

Formative Evaluation

Gagne (1985), while describing the process of the formative evaluation identifies two phases. One-on-one is the first phase which is followed by the small group evaluation. Each phase reveals data used to revise and improve instructional materials. The formative evaluation is on-going throughout the development of the instruction. The procedures used in the formative evaluation are the deployment and testing the worthiness of the products of instructional design. Therefore, the instruction materials were being evaluated while they were being developed. The three stages of formative evaluation were planned to collect the following information:

1. Clarity of teacher examples.
2. Order and sequence of performance checklist.
3. Comprehension of the instructor demonstrations.
4. The amount of time required to complete the instruction.

Summative Evaluation

The summative evaluation is a test of the instruction in the study to determine how well it met the goals. As each phase used the instructional materials, the designer observed the instructional process to determine whether or not the materials

were being used as they were designed to be used. Kirkpatrick (1987), has classified the summative evaluation into four steps, they are: reaction, behavior, learning, and results. During the instruction the performance checklist was used to evaluate the students' acquisition of skills. The results of the performance checklist assisted the designer in the summative evaluation of the instructional objectives.

Learning Transfer System Specification

The learning transfer system is designed to ensure that what a student learns is applied to new situations. Broad's (1982) research has shown that instruction done before, during, and after constitutes learning transfer. The functions of the computer mastered by the student, will be applied to similar computer related tasks before the student is allowed to proceed to the next step. Each function was taught in a logical sequence. And every assigned task used the learned computer functions.

Review and Selection of Existing Materials

After a careful review of existing materials in the analysis stage, there were no appropriate publications for teaching the functions of the computer to the designer's target population.

Summary

A task analysis began the design stage of the instructional systems design. There was a list of five tasks with associated subordinate steps required for the students to be able to master before they could complete a computer-generated children's

storybook. The instructional goal was classified as an intellectual skill and psychomotor skill and objectives were created for each task. The two forms of evaluation used were formative and summative. The design stage was concluded with a review of existing literature for possible inclusion into the computer based art project. One of the articles, was used for its approach in teaching students how to learn with the computer.

CHAPTER 4

DEVELOPMENT

Introduction

The third stage of instructional systems design is the development stage. The process and sequence of the learning activities were developed and reviewed by the designer, as was the evaluation of the training materials. The target population in Farmingdale school district were demonstrating a need for instruction in computer functions and icon usage. Instruction would develop within the students an understanding of how to operate the computer.

Learning Activity Development Scheme

Techniques suggested by Dick and Carey (1985), for developing the individual instructional material were used by the designer. The following checklist was utilized by the designer for individualized instructions. The instructional material:

1. contains a narrative of the instructor's part in the design and delivery process;

2. specifies the types of hardware and software to be used for the instructional process;

3. allows the students to proceed at their own rates;

4. includes several teacher approval checkpoints;

5. contains a performance checklist which will be used as a guide for the students.

After the results from the questionnaire were translated and student needs were determined, the instructional material was

implemented. The students were instructed in the various ways to begin thumbnail pencil sketches. From that point, the students were instructed in the icon functions of the computer. Each icon was explained and demonstrated to the students. The students were given time to practice and develop their own skills at using the icon before moving on to the next one. After all of the icons were explained and explored, the students were then instructed on how to use the performance checklist as a guide for completing their children's storybook. The performance checklist was also used to evaluate the students.

Learning Activity Development

The learning activity development started with the students' first day in class. The performance checklist was revised to create a more precise sequence for the checklist. It was explained to the students what they could expect from the class, and what behavior was expected from them to complete the course.

The designer expected the students to become computer competent from this course. Enabling them to continue further computer studies. The designer explained to the students that the course would be conducted as if it was a life-like art studio. The students would have an ongoing term project, (children's storybook design), which would be designed while also completing freelance type projects: a program cover for a concert or event, an important point was explained to the students on their designs. Many students could create designs for the same event. The students were not limited to finding completely different events. The students would be responsible for completing at least five

freelance projects plus the term storybook project. The students are expected to conduct themselves in a professional manner, as they would in any outside employment.

The reason for establishing the class in this manner was to develop within the students an understanding of how an art studio runs and turns out projects, as well as devlop responsibility, confidence and pride in their work. Also taken into consideration were certain instructional components which effect the entire sequence of instruction. They are as follows:

1. Motivation:

The fact that the computer in itself was an excellent motivator, the designer also used dazzling color images to help inspire the student's motivation.

2. Objectives

The objectives of the project were clear to the students from the beginning of the instruction.

3. Stimulating Recall of Prior Learning

The instructor used teacher and student samples to facilitate a discussion about computer art, and the students told about samples which they had seen.

4. Presenting the Stimulus

A variety of colorful images were shown to the students on the computer screen. The techniques used to create them were discussed and demonstrated. Black and white printouts of the color screens were distributed to the students, with an explaination that this is what they could expect to produce from a black and white printer. At this time a color printer is not available in

Farmingdale School District.

5. Providing Learning Guidance

The performance checklist was distributed to provide the students with a sequential order to follow and complete the instruction.

6. Eliciting Performance

The instructor explained how the computer icons would be used. The students demonstrated what they had learned by creating an image on the computer using the icons.

7. Providing Feedback

After each icon was explained and demonstrated, each student while creating their own image demonstrated the icon function. They were praised for their proper icon utilizations by the instructor.

8. Assessing Performance

After each task was completed by the students, several built in teacher checkpoints were used to assess the students performance. If problems arose, they were corrected. If all was well the students were allowed to continue. Each student could proceed at their own pace.

9. Enhancing Retention and Transfer

A post test was included to measure retention. Continuous practice of computer techniques is advantageous for the retention of intellectual skills. The comparision of the internal process to the instructional events and the lesson plans are summerized in Table 3.

Table 3

Internal Processes, Instructional Events and the Lesson Plan

Internal Process	Instructional Event	Lesson Plan
	INTRODUCTION	
1. Reception	Gain Attention	Gain attention/ motivate
2. Expectancy	Inform learner of objectives	Tell learners what they will be able to do
3. Retrieval to working memory knowledge	Stimulate recall of prior learning	Relate lessons previous class
	DEVELOPMENT	
4. Selective Perception	Present stimulus	Present learning activity
5. Semantic Encoding	Provide learning guidance	Organize/demonstrate activity
6. Responding	Elicit performance	Learner to perform activity
7. Reinforcement	Provide feedback	Give feedback
	SUMMARY	
8. Retrieval and Reinforcement	Assess performance	Concepts and generalizations
9. Retrieval and Generalization	Enhance retention	Evaluate; have spaced reviews

After the students had an understanding of how the class was conducted, the students were given the pre-test. The pre-test evaluation was given in order to determine what each student already understood about computers. The pre-test helped establish

the minimum level of computer competence of each student. from there the designer could begin instruction related to the student. This instruction would bring all of the students up to the same level. At this point the learning instruction of the functions of the computer could begin. Each computer function or icon was explained in detail to the students. The icons were also demonstrated until the students had full understanding of the function and capability. Follow-up exerises were completed by the students demonstrating to the instructor an understanding of the icon.

After the students had an understanding of all of the computer icons, including; loading, saving and printing procedures the students were given a performance checklist. The performance checklist was to be used as a guide to create a children's storybook containing typography and illustrations. The storybook project was explained to the students and questions were answered. The student had to obtain instructor approval of pencil sketches before the student could begin transferring the sketches into the computer. This prior approval was designed to head off any problems or design flaws in the student's work before a student started the time consuming task of transferring pencil sketches into the computer.

There is an important point to this project related to the amount of time a student uses on the computer. A student spending several hours working on a computer screen needs to refocus his eyes a distance across the room. Although each class period only lasts 45 minutes, the students should be told to focus their

eyes on a far point across the room every 15 to 20 minutes. Refocusing their eyes will help reduce unnecessary eye-strain.

Learning Activity Review

Learning produces a variety of outcomes which produce creative solutions to the same problem. Each learning activity is intended to produce a different type of learned capability. The designer reviewed the learning activities to ensure that all five main tasks were taught. They are as follows:

1. Computer functions
2. Story creation
3. Book design sketches
4. Convert sketches into the computer
5. Coloring and book binding requirements

When learning intellectual skills, the most important internal condition is the recall of prerequisite skills which enable the learner to build new skills upon. Cognitive stategies were used to enable the students to use their verbal skills to express their ideas. Psychomotor skills and coordination will determine the quality of the finished book. The computer does not do the drawing, the student does.

Materials for Evaluation Reproduced

There were several materials used for evaluation in this children's storybook project. Twelve copies of the activity package were created and distributed to the students. They are discribed in the following paragraph.

A project specification sheet was given to the students

prior to instruction, this was used as a guide to help the students complete the project. The revised performance checklist, which served as an evaluation tool as well as a guide for the students, was also given to them before instruction. The questionnaire, was used to determine the student's former knowledge and experience with the computer. The pre-test evaluation sheet, helped to determine the student's specific knowledge of computer functions and design abilities. The pre-test was administered to the students prior to the instruction. Finally, the evaluation checklist which was given to the students after the instructional part of the project. This checklist was used to detemine whether or not there was a transference of knowledge.

Summary

The development stage is the third phase in the instructional systems design. The learning activities were identified and sequenced. Each of these activities were developed and defined. The performance checklist was defined and each step was discussed. The comparison of the internal process to the instructional events and the lesson plans was reviewed. The designer reviewed the learning activities to ensure that all five main tasks were taught. Refocusing of student's eyes was discussed to help reduce unnecessary eye-strain.

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CHAPTER 5

IMPLEMENTATION

Introduction

Implementaton is the instructional procedure and description of materials which were placed into operation. The implementation consisted of: writing a children's short story and designing the layout of the book using the IBM Splash Program. The students utilized their acquired skills to manipulate the computer mouse to develop the story plot and characters into a six to eight page short story. The students received the teacher's approval at several check points, and the final product was two student performed copies of the story; one hand colored with marker or pencil and one in black and white.

Included in this chapter are the stages of implementation, materials reproduced, instructional delivery, data collection materials, a performance checklist, and a summary.

Materials for Implementation Reproduced

The learning materials listed were produced for the implementation. Most of these materials were available in the high school's computer lab. Teacher and student samples of the project were supplied by the designer. Sketch paper, markers and colored pencils were supplied by Farmingdale High School. The materials are as follows:

1. IBM PC 30 Computer (located in the computer lab.)
2. Computer Mouse (located in the computer lab.)

3. Splash Program (the major program to be used for this project because of its easy use and overall quality.)

4. Kid Writer Program (story writing program.)

5. Printer (located in the computer lab.)

6. Project Specification Sheet (listing specific measurements.)

7. Teacher Samples (book samples produced by the teacher, showing different styles and techniques.)

8. Student Samples (student work from previous years, highlighting specific problems and solutions.)

9. Library Samples (to show the students simple design solutions, use of color, and type usage.)

10. Computer Review Sheet (listing computer functions.)

11. Teacher Checklist (sample to be reviewed with students before they perform each function or step.)

12. Colored markers and pencils (to be supplied by the school.)

13. Layout Sketch Paper (to be supplied by the school.)

14. Pre-test checklist (questions posed to the students.)

Instructional Delivery

The instructional method used was a hands-on learning activity. The students were given a questionnaire which was used to determine any prior computer knowledge. This was followed by a pre-test which was given to determine if the student had a need for instruction. If a need existed, the student received a copy of the project specification sheet and a performance checklist, so

they would know what is expected of them and how they will be graded. Using teacher, student, and library samples of children's books for reference, the students were asked to write a short story; developing both characters and plot. The students created pencil sketches on paper before they began recreating their designs on the computer.

Before commencement of designing a storybook, the students designed a story using the Kid Writer IBM Program. This program is specifically designed for writing stories with imaginative landscapes and colorful characters. It contains about a dozen base backgrounds: farmland, cave scene, space scene, jungle scene, and so forth. These scenes utilize the top two-thirds of the picture screen. The bottom one-third is left blank, which is to be used by the students to type in their story. The program also contains approximately fifty items ranging from small sail boats to alien monsters. The limitations of this program is that the students can alter only the color of the images they use; e.g. a yellow flower to blue. The students can not create their own characters or scenes; they must use what is available on the computer. After the students have completed their story on Kid Writer, which should take five forty-five minute class periods, they can then begin developing their story on the IBM Splash Program. The success on Kid Writer should give the students the needed confidence to create original images.

After the teacher has given approval of the printouts of the story, main theme, and outline, the students began their pencil

layout sketches. These sketches included story plot, illustrations, illustration locations, and items or characters. A point which was stressed to the students was that the students would be graded on their designed creations rather than their story plots. Also, these sketches reflected type specifications. When these pencil sketches have been approved by the teacher, students incorporated all ideas and begin reconstruction of the sketches on the computer.

Throughout the computer design phase, the students received constant teacher attention and guidance. Once the students obtained the teacher's approval of their final computer compositions, the students produced two printouts and combine one of them with the cover binding requirements. The color, B&W, and outline must be submitted for grading. At the beginning of the instruction the students received a project specification sheet indicating all requirements for successful project completion. The remainder of the first lesson was used to answer student questions. At the end of the project a post test was administrated to the students to determine if learning occurred.

Data Collection

Data collection is the process in which the designer used to gather appropriate information on the students from the students. This project completed data collection by the use of a questionnaire, pre-test, post-test, and a checklist. The questionnaire asked general questions about the student's knowledge of the computer. The checklist was used to guide the students to their final product, a storybook.

A questionnaire was distributed to all students enrolled in Studio in Art. This questionnaire was used to obtain data on computer expertise and student interest. A pre-test was given prior to the instruction. Each student received a performance checklist at the beginning of the project. The designer used this checklist to determine the completeness of each step. The checklist provided documentation of the student's progress on their project. A post test was given to the students after the instruction. The tests were used for data documentation on the information gained by the students during the instruction.

Summary

Implementation is the process of putting the instruction program into operation. The target population was instructed in the use of the computer. They learned how to utilize the IBM Splash Program to create their own children's storybook designs. Each student at the beginning of the instruction was given a questionnaire which was used to determine previous computer knowledge. Then a pre-test was given this was used to determine if the student had a need for instruction. If a need existed the student was given a project specification sheet and a performance checklist. This checklist stated each step of the student's responsiblities to complete the course project successfully. A post test was given at the end of the instruction to determine if learning had occurred.

CHAPTER 6

EVALUATION

Introduction

Evaluation is an on going process that begins with the stage of analysis and continues after implementation has taken place. It consists of assessing performance, identifying concerns and revising instructional goals to address the deficits that arise out of the process. The material and information that is collected during the evaluation permits the designer to create a better instructional delivery. The designer conducted two types of evaluations. The first is the formative evaluation which consisted of a one-on-one lesson and a small group lesson. The formative evaluation allows the designer to make any necessary changes regarding the instruction and, therefore, a better lesson will be created. The summative evaluation examined the results of everthing that was done during the implementation stage. The summative evaluation is also a defense for the lesson and the test scores of the pretest and post test will give concrete evidence of the value of the lesson. This is an ongoing process which will continue past the implementation stage.

Formative Evaluation

Development of instruction is of little value unless it can be proven effective in accomplishing the performance goals. The formative evaluation techniques were developed to collect data and information during the development process. This data was used to

improve the effectiveness of the instruction during its implementation with the students. The three stages of formative evaluation used for this project were described by Gagne (1985). Each of these stages were valuable to the designer during the collection of data.

Evaluation began after the students explored the Kid Writer Program, which helped the students develop their stories onto hard copies. The program had channelled the students into using the first few steps of the performance checklist, in which the students' evaluation was based. Part of the grading criterion will be based on the observation of the student manipulating the computer. Immediate praise was given to students who exhibited signs of growth and knowledge of the computer functions. Students who displayed uncoordinated efforts were given individualized attention. As the students proceeded with the project, each step was checked off. This allowed the instructor to determine the pace of each student. If a student needed more attention in a certain area, it was administered.

One-On-One

When starting the test run of a one-on-one situation, the designer wanted to obtain as much information as possible. To accomplish this two students were enlisted, one was attending a Studio in Art class, the other student, was a former Studio in Art student. This latter student had expanded her art abilities by taking an advanced art course. The designer wanted to compare the abilities of each student with regards to how each interacted with the computer and how creative each was. A prerequisite for

this unit of computer graphics is the successful completion of one year of Studio in Art. These two students were used because they had previous experience with the IBM system. This is necessary for completion of this project. The reasoning for this prerequisite was the time spent in the computer course should be spent working with the computer and not teaching basic art skills.

Before explaining the process of this project, the designer's philosophy that art encompasses all subjects was interjected. This is to say that art touches all other aspects of life and creativity is a gift in which all humans have ability. The students were handed a project specification sheet and a pretest. This pretest was developed from the performance checklist. They were asked specific questions relating to layout and book design. The questions were similar to the checklist, instead of YES/NO, it was PASS/FAIL.

The performance checklist needed to be revised because there were steps which were out of sequence or just not needed for the students to complete the objective. The performance checklist was streamlined and the students found it less confusing to follow.

The students responded well to the teacher samples and found them helpful with regards to design aspects. The pre-page design layouts were thought to be constrictive but were used as a base for other ideas The students also found the type style sheet to be useful when the student was deciding on story type layouts. The tonal sheets were instrumental to the students when it was time to develop their illustrations. The students acknowledged that they

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liked having various samples of printers and printing techniques to study before they actually started designing. This assisted the students in their design process.

The designer found major differences in the time allocated for each objective. Some objectives required a considerable amount of time over what was designed. While others require much less than designed for. Overall, the time lines were maintained and an even balance was struck.

The students were instructed in the use of the Kid Writer Story Writing Program. The students responded well to the program. They did mention that the program was easy to use and completed several simple stories within a few class periods. At the end of the third class, the students' imaginations were primed and they were asked to begin pencil sketches of a more developed story. At first, the students tended to use the same background ideas from the Kid Writer Program. A strong suggestion was made to develop new ideas. Along with teacher guidance the students completed their stories.

Small Trial Group

For the small group instruction, the same process was followed as that in the one-on-one evaluation. Four Studio in Art students were used for this trial group. The instruction began with the previously used pretest. The results are listed in Tables 4 and 5:

TABLE 4

Small Trial Group-Prior to Instruction

TASK / STUDENT	1	2	3	4	5	6	7	8	9	10	TOTAL PASSING
1	F	F	P	P	P	P	F	F	F	F	4
2	F	F	P	P	F	P	F	F	F	F	3
3	F	F	P	P	P	P	F	F	F	F	4
4	F	P	P	P	P	P	F	F	F	F	5

The students from the small trial group had great difficulty completing the pre-test tasks. This information resulting from table 4 would indicate the need for the instructional part of the training.

TABLE 5

Small Trial Group-After the Instruction

TASK / STUDENT	1	2	3	4	5	6	7	8	9	10	TOTAL PASSING
1	F	F	P	P	P	P	P	P	P	P	8
2	P	F	P	P	P	P	P	P	P	P	9
3	P	P	P	P	P	P	P	P	P	P	10
4	P	P	P	P	P	P	P	P	P	P	10

The students had shown signs of frustration and annoyance with the project prior to instruction. After the instruction, the students had shown a marked increase in interest toward this book project. They quickly completed each task on the post-test. The students were then instructed to explore story ideas on the Kid Writer Program. The only stipulation made, was that the students should create only three stories on the Kid Writer Program.

After they had completed the correct amount, they could begin their final stories on the Splash Program. The reasoning for this change from the one-on-one was that the students were starting to clown around. (The program is easy to operate.)

TABLE 6

Small Trial Group Evaluation Results

STUDENT NUMBER	PRETEST SCORE %	POST-TEST SCORE %	GAIN IN SCORE %
1	40	80	40
2	30	90	60
3	40	100	60
4	50	100	50

Small group instruction indicates that no further changes are necessary. The small changes made after the one-on-one evaluation were positive. The post-test results clearly indicate

the need for instructional training.

Summative Evaluation

The purpose of the summative evaluation is to assess the value of the instructional materials. This was accomplished through Kirkpatrick's (1987), four levels of evaluation: reaction, learning, behavior, and results.

Reaction

This level of the evaluation asks the question: Did the students feel value or worth in the information they were learning? The reaction level does not deal with the actual learning. It measures the worth of the materials and content. The reaction level was measured by a formal survey in which the students remained anonymous. This survey was given to the pilot test students after all of the evaluation measures were finished. The students responded well to the survey, and most had found the information in the course of value. The survey was set up for the students to answer a series of multipule choice questions and the final question allowed the students an opportunity to express themselves about the course more completely. The students demonstrated by their responses that they liked having the chance to make their own statements about the program. A copy of a student reaction sheet can be located in Appendix L. The score percentage of sample questions and a summary of their written responses are listed in Table 7.

TABLE 7

Student Evaluation Survey Results

1. What section of the project did you enjoy most?

a. sketches	b. designing	c. composition	d. binding
20%	70%	7%	3%

2. What section of the project needs to be revised?

a. sketches	b. design	c. checklist	d. none
5%	0%	2%	93%

3. Was the performance checklist helpful as a guide?

a. yes	b. no
98%	2%

4. Was the pre-test needed to demonstrate learning?

a. yes	b. no
75%	25%

5. Did the Kid Writer Program help with computer learning and story ideas?

a. yes	b. no
90%	10%

6. Do you believe the information taught in this class will be useful toward your future?

a. yes	b. no	c. undecided
90%	8%	2%

7. Did you enjoy learning with the computer?

a. yes	b. no
100%	0%

8. Any comments about the program you would like to make may be written below.

Most of the student comments were related to obtaining advanced computer graphics software and programs. Most of the students found meaning and purpose in the pre-test and post test. The students also found the performance checklist to be very

helpful as a guide to designing and completing their storybooks.

Learning

The three measures of learning performance were: 1) the pretest, 2) the post test, and 3) the performance checklist. The students' scores on the pretest confirmed their need for instruction. The performance checklist was used by the students as a guide and self-evaluation. The designer relied on the performance checklist to assist with individual student evaluation.

There was no field trial-pilot test. After the twelve students completed their pretest and the results were in, they were placed into three groups consisting of girls and boys from a variety of cultural backgrounds. Some of the students asked if they could design a storybook using a langauge other than english. The designer thought this was an excellent idea and the students proceeded. Each group also consisted of students with varied abilities according to a co-operative learning fashion: high achiever, low achiever. This type of classroom set-up allows the slower learners the opportunity to keep up with the rest of the class while the faster learners are demonstrating mastery learning of the subject being taught. Mastery learning is when a student has understood the information being taught so well, that the student is capable of relating the new information to other stuedents as accurately as the teacher. This was overseen by the designer and uncoordinated attempts were corrected to productive attempts.

The revised performance checklist helped facilitate the pilot

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test students. The students found the sequence of steps clear and concise.

The pilot test students did not display high or above average scores prior to instruction. It was determined that tinstruction was necessary for these students. Instruction was administrated.

TABLE 8

Pilot Test-Prior to Instruction

TASK / STUDENT	1	2	3	4	5	6	7	8	9	10	TOTAL PASSING
1	F	F	F	P	F	F	F	F	F	F	1
2	F	F	P	P	F	P	F	F	F	P	4
3	F	F	P	F	F	F	P	F	F	F	3
4	F	P	P	P	P	P	F	F	F	F	5
5	F	F	P	F	F	F	P	F	F	F	2
6	F	F	P	P	F	P	F	F	F	P	4
7	P	F	P	F	P	F	P	F	F	F	4
8	F	F	P	F	F	P	P	F	F	F	3
9	F	F	P	P	P	P	P	F	F	F	5
10	F	F	F	P	F	F	P	P	P	F	4
11	F	F	P	P	F	P	F	F	F	F	3
12	F	F	P	P	P	P	F	F	F	P	5

The testing results from the pilot test group were similar to

those from the one-on-one and small group trial. Clearly instruction was needed. The designer proceeded with the instruction in the same manner as with the one-on-one and small group trials.

TABLE 9

Pilot Test-After Instruction

TASK / STUDENT	1	2	3	4	5	6	7	8	9	10	TOTAL PASSING
1	P	F	P	P	F	P	P	P	F	P	7
2	F	P	P	P	P	P	P	P	P	F	8
3	P	F	P	P	P	P	P	F	P	P	8
4	P	P	P	P	P	P	P	F	P	P	9
5	P	P	P	P	F	F	P	P	P	P	8
6	F	F	P	P	P	P	P	P	P	P	8
7	F	P	P	P	P	P	P	P	P	F	8
8	P	F	P	F	P	P	P	P	P	F	7
9	F	P	P	P	P	P	P	P	F	F	7
10	F	P	P	P	P	P	P	P	P	P	9
11	P	P	P	P	P	P	P	P	P	P	10
12	P	P	P	P	P	P	P	P	P	P	10

The pilot test group has also displayed a vast improvement after after the instructional part of the program. The results of tables 8 and 9 are evaluated in table 10.

TABLE 10

Pilot Test-Evaluation Results

STUDENT NUMBER	PRETEST SCORE %	POST-TEST SCORE %	GAIN IN SCORE %
1	10	70	60
2	40	80	40
3	30	80	50
4	20	90	70
5	20	80	60
6	40	80	40
7	40	80	40
8	30	70	40
9	50	70	20
10	40	90	50
11	30	100	70
12	50	100	50

The results of gain in score percentage did not rise as dramatically as in the one-on-one and small group trial. This lower rise in gaind score could be attributed to the designer's observing a lower level of concentration on the part of the students. The students were aware of the experimental nature of the project. Although the students would receive a mark toward

their final quarterly grade, the results may still be tainted.

Behavior

This part of the evaluation is used to decide if an observable change of behavior has taken place. When it comes to evaluating an instructional program in terms of behavior, Kirkpatrick lists several guidlines, including a performance checklist completed by the person receiving the instruction. Each student completed the performance checklist and the designer used it to evaluate the student.

Results

Kirkpatrick (1987), asks the question, did the change in behavior positively affect the "organization" or the schools' computer graphic program? The results are examples of carefully designed storybooks, proper binding and a controlled use of the computer functions. Indicated in the post test results learning and behavioral changes has occurred.

Learning Transfer

When instruction is properly designed, the designer expects students to apply the information they have learned from the instruction to other applications in similar or dissimilar areas. Broad (1982) has stressed the importance of including activities before, during, and after instruction to facilitate learning transfer in the instruction design. The designer stressed the similarities of computer applications to other software. The methods learned from this instruction would be appropriate in an employment situation. A follow up evaluation of students who

enroll in other advanced computer instruction such as desk top publishing, will provide further insight into learning transfer.

Summary

The steps of the formative evaluation were useful in developing the design. The one-on-one and small group evaluations allowed the designer to look at the possible student responses to the instruction.

The summative evaluation allowed the designer to observe the effect on the students of reaction, learning, behavior, and the results. When evaluating the students' book creations, taken into consideration was the amount of creativity developed in them. The overall results of the instructional segment of the project show that it is an essential part of the student's art development. The performance checklist provided a clear instructional document and evaluation sheet, which they found easy to follow and helpful for the completion of their project. They also liked knowing exactly how they would be graded before the project began. This exposure to computers will help our graduates integrate themselves into the art field. The art department will survey students who utilize computer graphics at the college level.

CHAPTER 7

SUMMARY AND RECOMMENDATIONS

Introduction

This chapter summerizes the instructional project described in this document: a children s story book designed on a computer. Chapter one explains what the designer intended to happen during the five steps of the instructional systems design and Chapter seven explains what actually happened. The conclusion at the end of this chapter explains recommendations that could assist other designers in developing and extending this type of project to a different population or school district.

Methods and Procedures Used

The methods used for this instructional project were based from a "hands on" approach which involved teacher, student, and library samples of children's story book designs. The major instructional area was teaching computer graphics, not teaching art basics. The five stages used in this project were: analysis, design, development, implementation, and evaluation.

Analysis

In the beginning of this stage the designer conducted a needs analysis, a job task analysis, a target population analysis, and an analysis of the instructional goal. The instructional need was developed because of a growing concern that the students would not be able to complete in the field of computer graphics. The computer art class would give the student a basic understanding of the functions of the computer. Whereas, the student could pursue

further study in a college setting. The analysis also proved that Farmingdale was already equipped with with appropriate computers. all that needed to be obtained was administration permission and suitable programs.

The target population consisted of 9-12 grade Farmingdale students who had completed the prerequisites of Studio in Art and one advanced art class. This is an important point because this computer class is to teacher computer, not art basics.

The instructional project utilized teacher, student, and library children's story book samples. This proved to be very helpful in directing the students to use design ideas which were clear and simple. Teacher imput was always available for the students.

The designer developed a timeline at the beginning of the project, which began January 15, 1991 and ended April 15, 1991. PERT and Gantt charts were developed and used to locate any unnecessary conflicts or interruptions with regards to the flow of the project. The analysis stage ended with the development of the budget. The project costs of implementation and development were kept within a resonable amount. This could be done because the school system already had purchased much of the needed equipment.

Design

The design stage involved several steps. First the designer conducted a task analysis, at which time the pre-entry level skills of each student were established. Performance objectives were written for each task. The preformance objectives were

grouped in the order most appropriate for a step-by-step completion of the task. Since the activity involved intellectual and psychomotor skills, the designer developed pre-instructional testing, and follow-up activities. The design of the project would be based from the student's past knowledge of Studio in Art design techniques. The students would be instructed in the use of the computer in the area of layout design. They would have the benefit of seeing teacher, student, and library samples of page layouts.

Development

Hands-on learning activities require hands-on demonstrations. The students were shown a variety of printed teacher and student samples of book design and layout possibilities. It is important for the students to understand that there is more than one design solution to book design. Various ideas were shown to the students to help them formulate their own creations. After design ideas are sketched out with a pencil and paper and the student receives teacher approval, the student may transfer the design into the computer. This is a time consuming task which requires the student's full attention to detail. When an exact representation of the student's sketch is drawn into the computer, the student is required to again obtain the teacher's approval. These teacher approval check points help the students stay on track with regard toward this project and allows the teacher close interaction to add positive reinforcements. After teacher approval and feedback a student continues to revise a

design to a final finished product. Revision and adaptation continue in the classroom to upgrade the curriculum.

Implementation

The designer implemented the computer based art project by establishing with the students entry level behaviors. The designer took a step by step approach to each lesson and procedure. Each computer icon was carefully explained and demonstrated to the students. It was then explained to the students: what each student needed to accomplish and grading criteria. Story book specifications sheets were distributed and throughly explained to the students. Although, the story line needed to be simple It was made clear that this was more a design project rather than a writing assignment.

Evaluation

The formative evaluation consisted of a one-on-one trial and small group trial. The designer used feedback from the students to make a few modifications in the lessons for this unit. Individual problems encountered by some of the students served as an indicator to modify the plan. What began to show up in the program was the limited use of the Splash program. Other programs will replace Splash when the funds and updated technology become available. The fact that a color printer was not available, made a considerable difference in how the students designed their books. Black and white books were created and then hand colored with colored pencil or marker. The summative evaluation was based on the learning activity after the performance checklist was revised. There must be

on-going evaluations in order to find out the value of the lesson. Gagne's (1985) suggestions were used for the development of the instruction and learning activity. After the one-on-one and small group trial instruction, the difference between the pretest and post-test scores is considerable. The post-test results indicate the instructional training was a valuable and needed part of the student's educational process. The students in this group were highly motivated by the computer.

Conclusions

The designer evaluated the implementation stage and the post-test results of the performance checklist and concluded that by using teacher, student, and library samples of children's story books the target population received and absorbed the learning information to complete the project. Upon the completion of their books the students were enthusiastic about their book designs and fellow classmate designs. They enjoyed showing and talking about them with the other students.

The designer was pleased with the post-test results and the success rate of the project. As a result of such success of this project, the designer has held a in-service workshop for teachers in the Farmingdale School District.

Recommendations

When developing a computer lab for student use, not only should a networked drawing system be established but also single program stations. These single program station set-ups should be used to run more advanced drawing and painting programs. The

advanced drawing and painting programs operate under a "windows" environment, this means that the system has drop down menus which makes the system more user friendly. Programs operating under a "windows" environment do not network well. This is why single stations should be utilized as an option. Students can be assigned time lots to complete more advanced work.

Concluding Statement

Because of my envolvement on the computer curriculum development committee and my enthusiasm in computer generated art, Farmingdale High School is allowing this designer to implement a computer graphics curriculum beginning in September, 1991. The designer will implement this thesis project as the major thrust of the computer curriculum. Many hours of preparation have been used to ensure a successful first year this coming Fall.

APPENDIX A

Project Specification Sheet

APPENDIX A

Mr. Buchholz

Project Specification Sheet

Student Name: _____

Title: Computer Generated Children's Story Book Design

Directions: Design a six to eight page story book, using pencil sketches as a guide to transfer into the computer.

Sizes: The student must use a cover (front and back), fly sheet (front and back, inside covers), and six to eight pages. Actual book size will be determined by the student's design.

Layout: Illustrations will be as follows: one full page, two quarter page spots, and three half page.

Printouts: The student will create two printouts, one will be hand colored, the other will be in black and white, both will contain cover and fly sheet requirements to be turned in for grading.

APPENDIX B

Performance Checklist

(Revised)

APPENDIX B

PERFORMANCE CHECKLIST (REVISED)

STUDENT NAME: _____ DATE _____.

	YES	NO
1. Position mouse on load, click, and open file.	___	___
2. Position arrow on save and click mouse.	___	___
3. Write introduction to a short story on paper.	___	___
4. Write body of short story on paper.	___	___
5. Write conclusion to a short story on paper.	___	___
6. Design book page layout on paper.	___	___
7. Convert pencil sketches into the computer.	___	___
8. Use type styles in the computer.	___	___
9. Create illustrations: one full page, two quarter page spots, three half page.	___	___
10. Use six to eight pages for story.	___	___
11. Print two copies of the story.	___	___
12. Color one book in pencil or marker.	___	___
13. Coordinate story colors with the fly sheet.	___	___
14. Cut paper to book size, covers, flies, and story pages.	___	___
15. Glue book together, neatly.	___	___
16. Turn in one color book and one black and white book.	___	___
17. Turn in main theme page, for evaluation.	___	___
18. Turn in pencil sketches, for evaluation.	___	___

APPENDIX C

Performance Checklist

APPENDIX C

PERFORMANCE CHECKLIST

STUDENT NAME: _____ DATE _____. YES NO

1. Position mouse on file, click, and hold.
2. Double click on file.
3. Position arrow on file, drag to save as.
4. Write/print main theme to short story.
5. Write outline of story.
6. Write introduction to a short story.
7. Write body of short story.
8. Write conclusion to a short story.
9. Cut cover stock to 9x12" size.
10. Use at least four colors.
11. Use type styles in the computer.
12. Cut fly sheet stock to 8 1/2x11" size.
13. Coordinate story colors with fly sheet.
14. Use six to eight pages for story.
15. Cut body copy pages to 8 1/2x11".
16. Make illustrations: one full page.
    two 1/4 page spots.
    three 1/2 page.
17. Print two copies of story.
18. Color one book in pencil or marker.
19. Glue book together, neatly.
20. Turn in one color book, one B&W book.
21. Turn in main theme page.
22. Turn in outline page.
23. Turn in completed story.

APPENDIX D

Questionnaire

APPENDIX D

Questionnaire

Student Name _____

1. Have you ever used a computer for any school work? If yes, explain what type, program used.
2. Do you know what a computer mouse is? If yes, explain.
3. Do you know what a program is? If yes, explain.
4. Do you know what a curser is? If yes, explain.
5. When working with a computer and you draw a line on the screen, are you drawing the line or is the computer?
6. Have you ever taken a typing class?
7. Have you ever used a typewriter?
8. Do you think computers make life easier or harder?
9. Do your parents work with a computer? If yes, explain.
10. Do you have a computer at home? If yes, what type and what type of programs.
11. Do you think you will work in a career with computers?
12. Is Studio in Art a good prerequisite for this computer graphic class?
13. Should this computer graphics class be required?

APPENDIX E

Pre-Test Evaluation

APPENDIX E

Mr. Buchholz

Computer Graphics Pre-test Evaluation

Student Name: _____

1. Define a computer mouse.

2. Define a computer icon.

3. What does it mean to produce hard copy?

4. Explain what a fly sheet is used for?

5. What does a four color story book mean?

6. Is there only one type font in the computer?

7. What is a spot illustration?

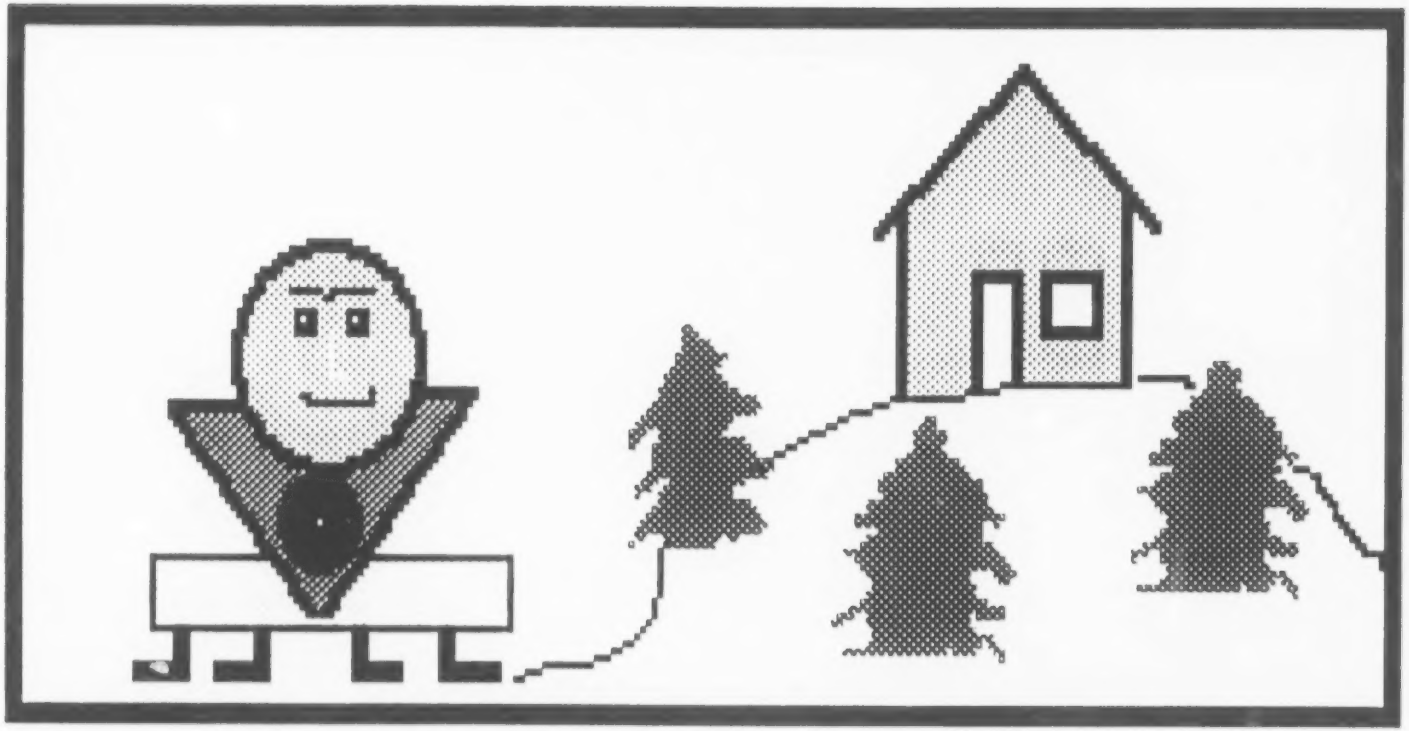
8. Explain how to print a file.

9. What is a type font?

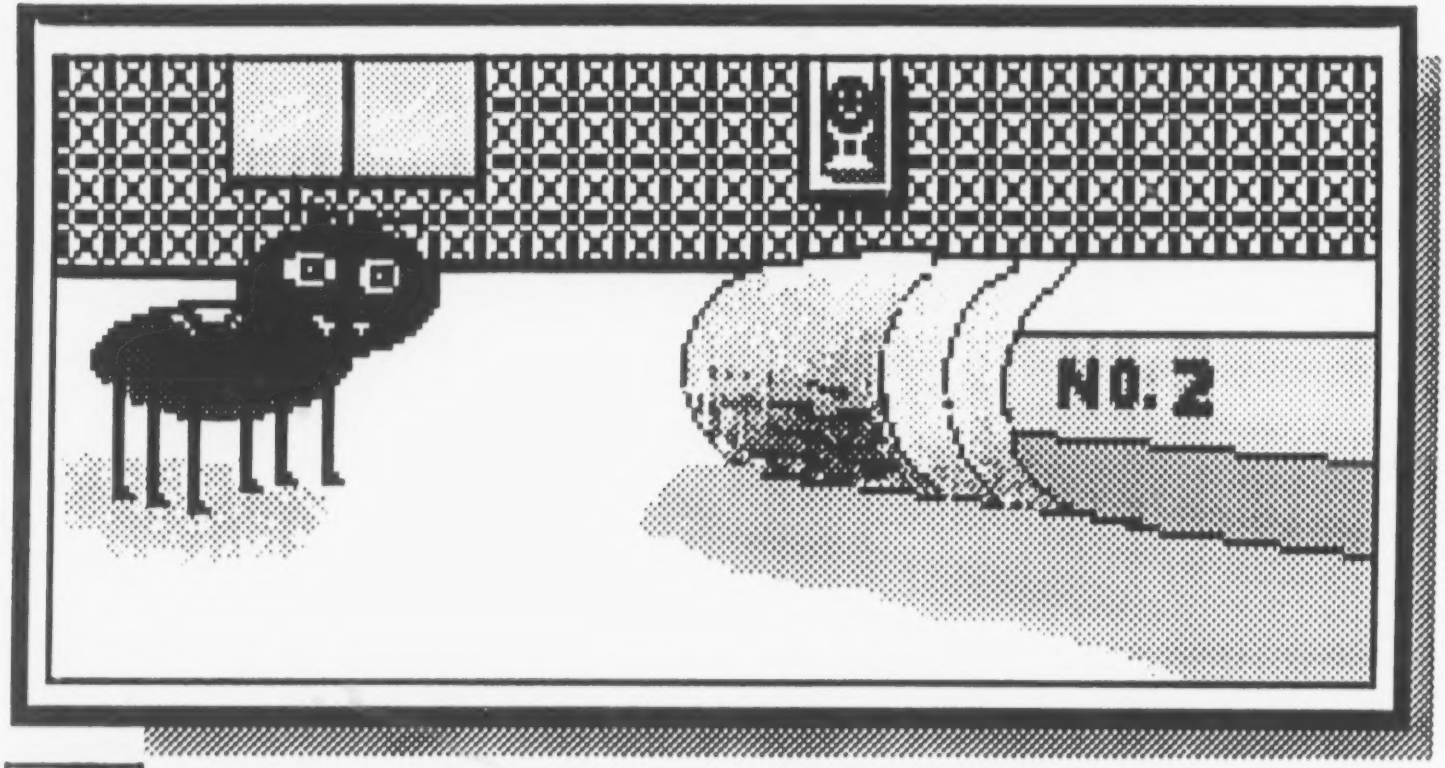
10. Describe one of the functions of the computer icon.

APPENDIX F

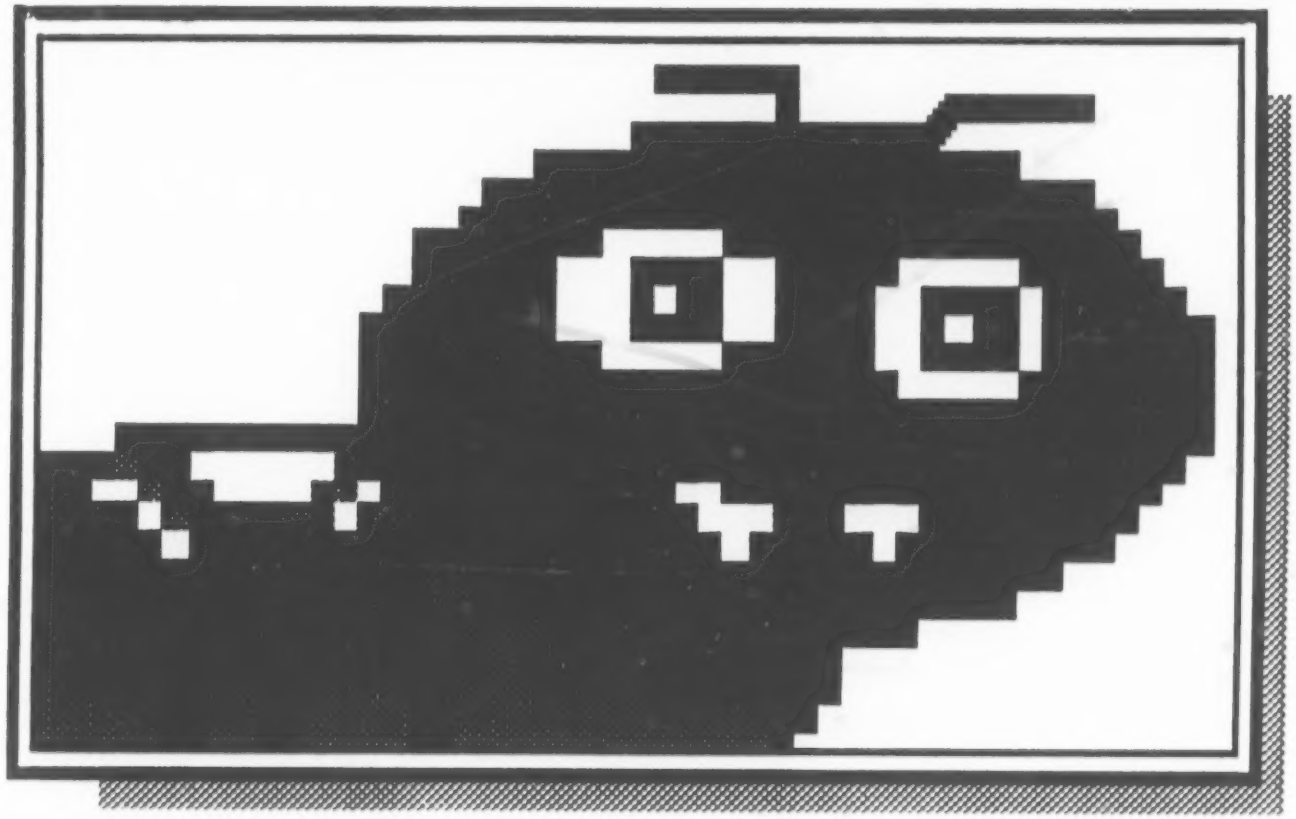
Teacher/Student Book Samples



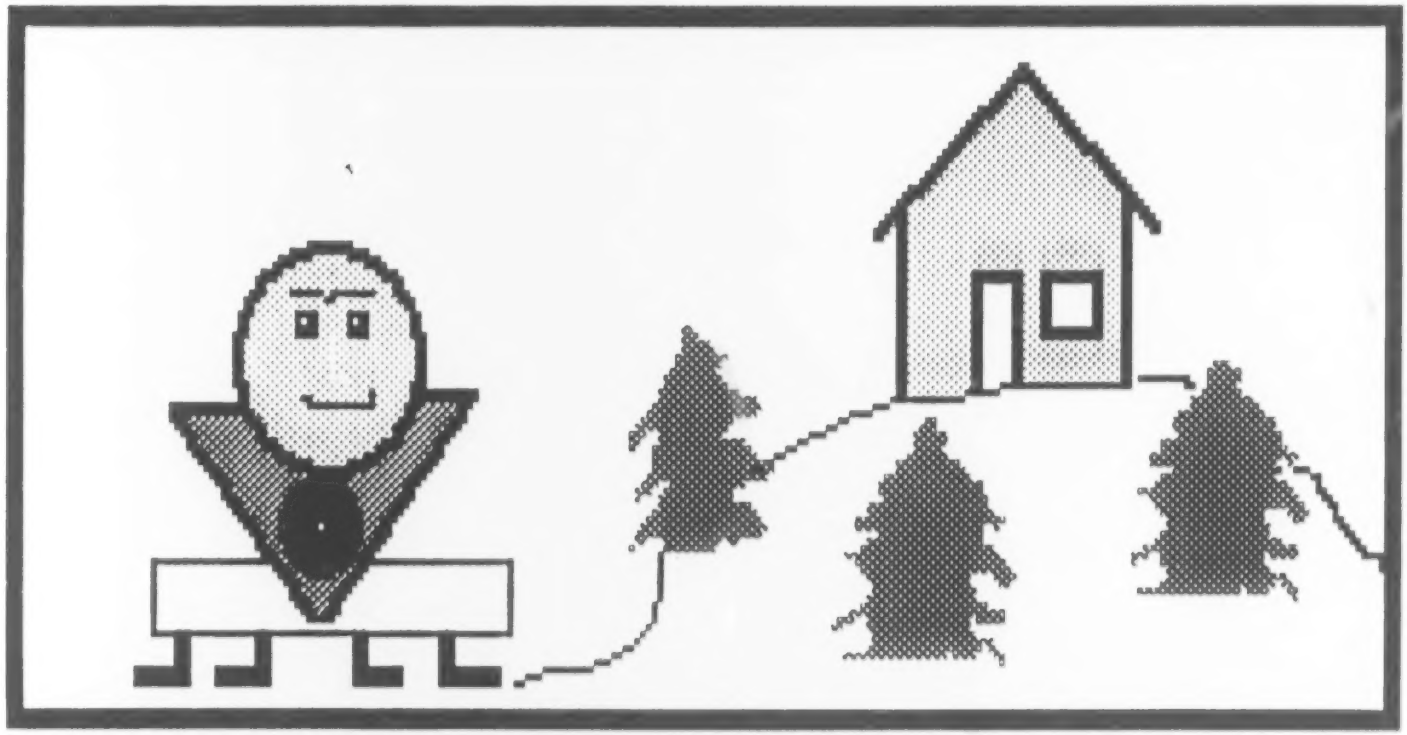
Once apon a time there lived a small creature called: Sam Spot. He was



Once apon a time there lived a small creature called: Sam Spot. He was

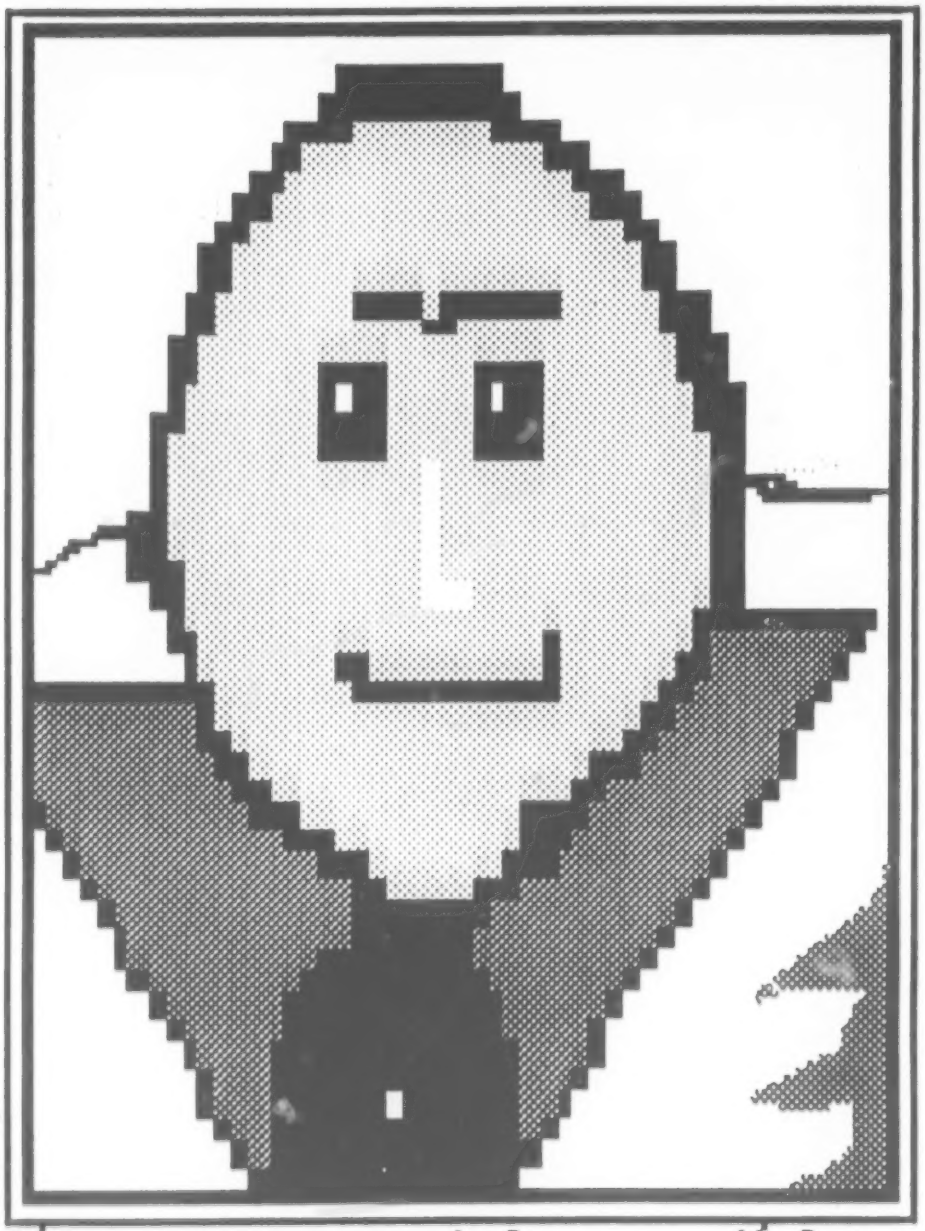


called Sam Spot for a
very special reason.
One day Sam Spot was

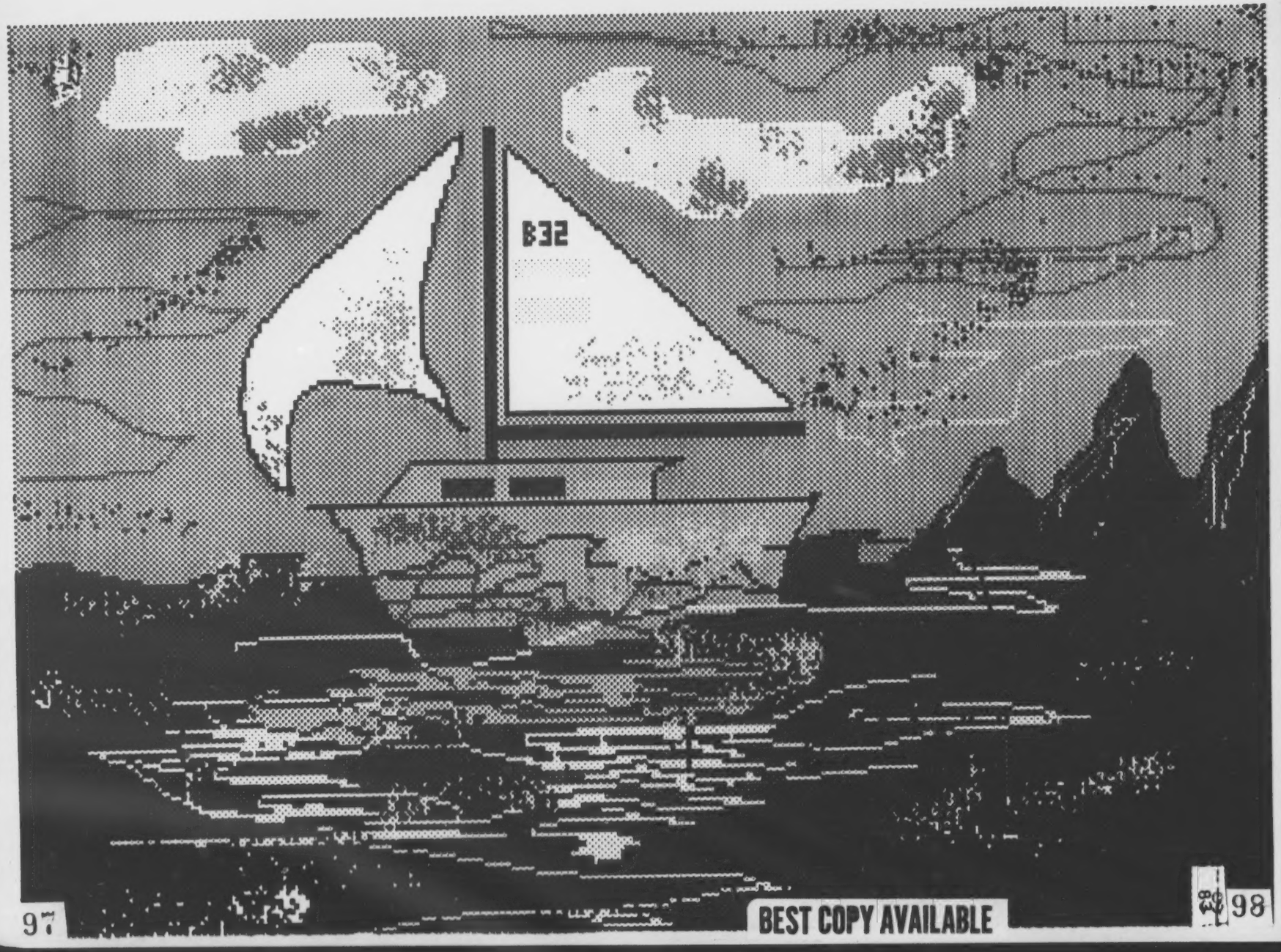


Once apon a time there lived a small creature called: Sam Spot. He was

on his way
home when
he saw
something
strange.
Sam Spot
did not see



the large shape moving his w



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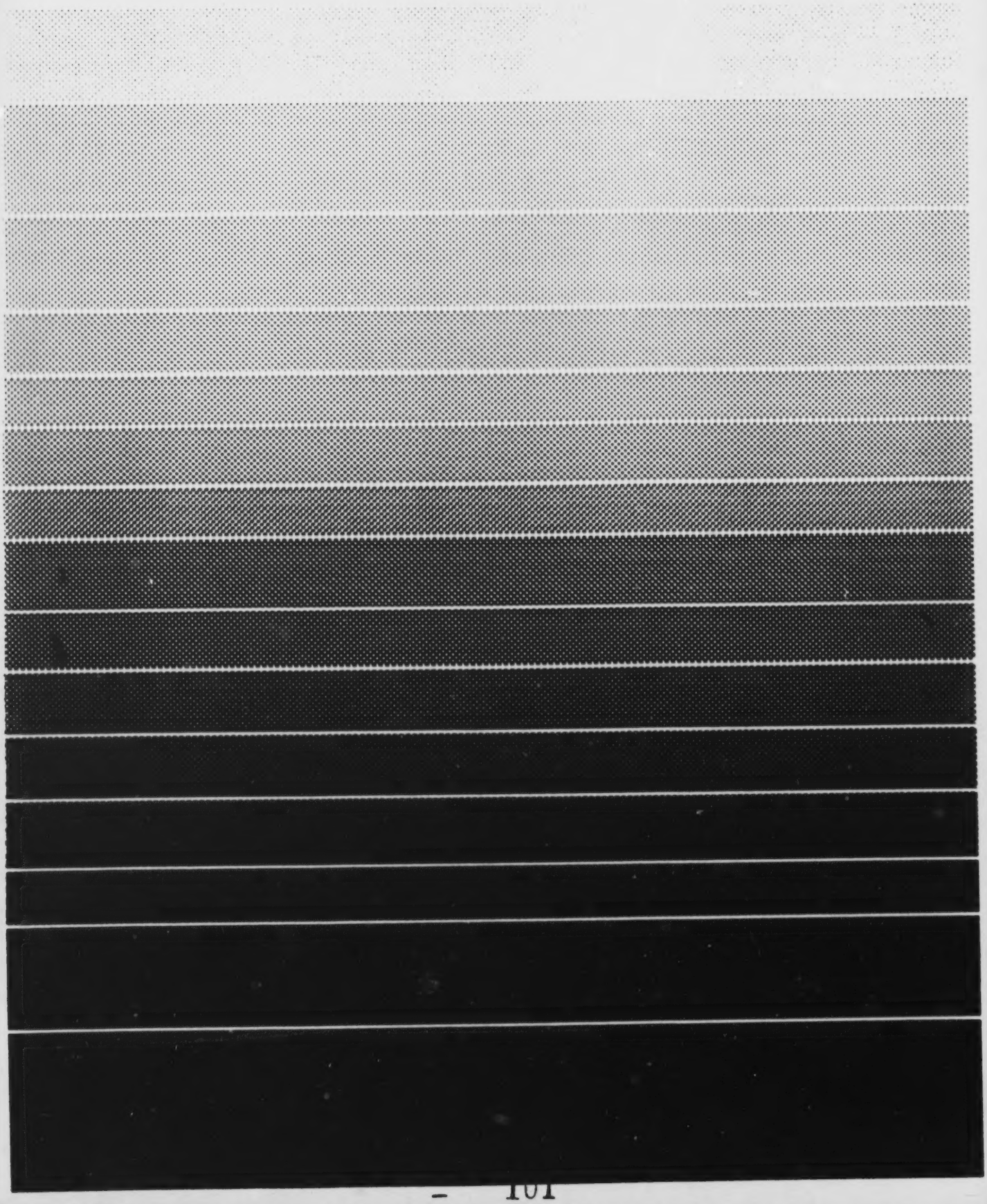
Sample Fonts
MEDIUM
ABCDEFGHIJKLMNOP
ABCDEFGHIJK
ABCDEFGHIJK
ABCDEFGHIJK
ABCDEFGHIJKL
ABCDEFGHIJKL
ABCDEFGHIJK
ABCDEFGHIJK



Atlas
BY SPINNAKER
Klash

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Hi! My name is
Pollie.
I'm a great dog.
My fur is mostly
white.
108

My afternoon starts when I wake up from my nap

11

111

90

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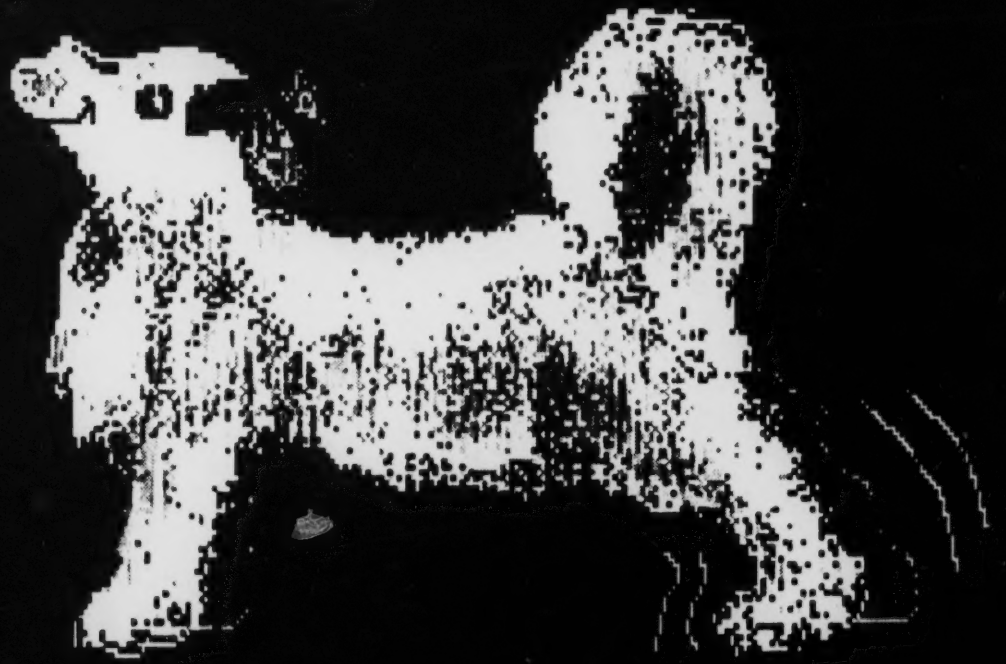
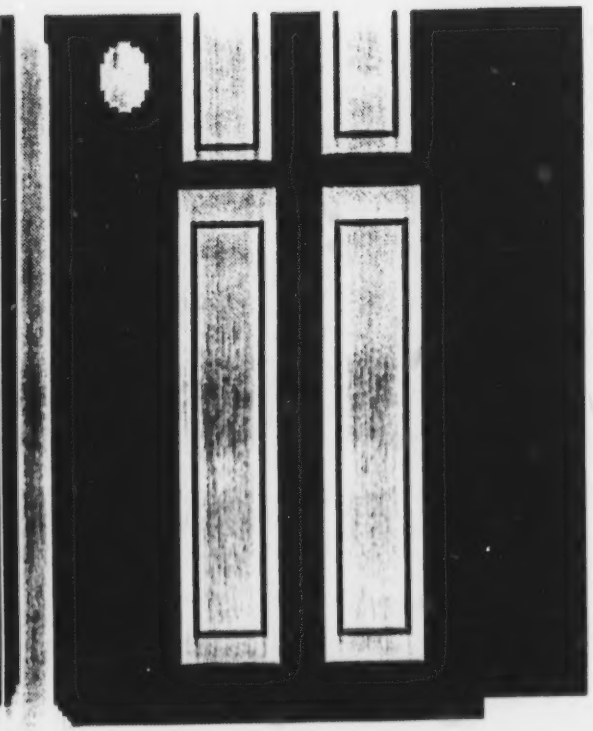
I finish my routine by stretching my back legs out.



114

115

92



for the door to open
so I can run out!

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After a great afternoon, I go inside to drink and eat.

120

121

When I have a great afternoon,
it makes me very tired...

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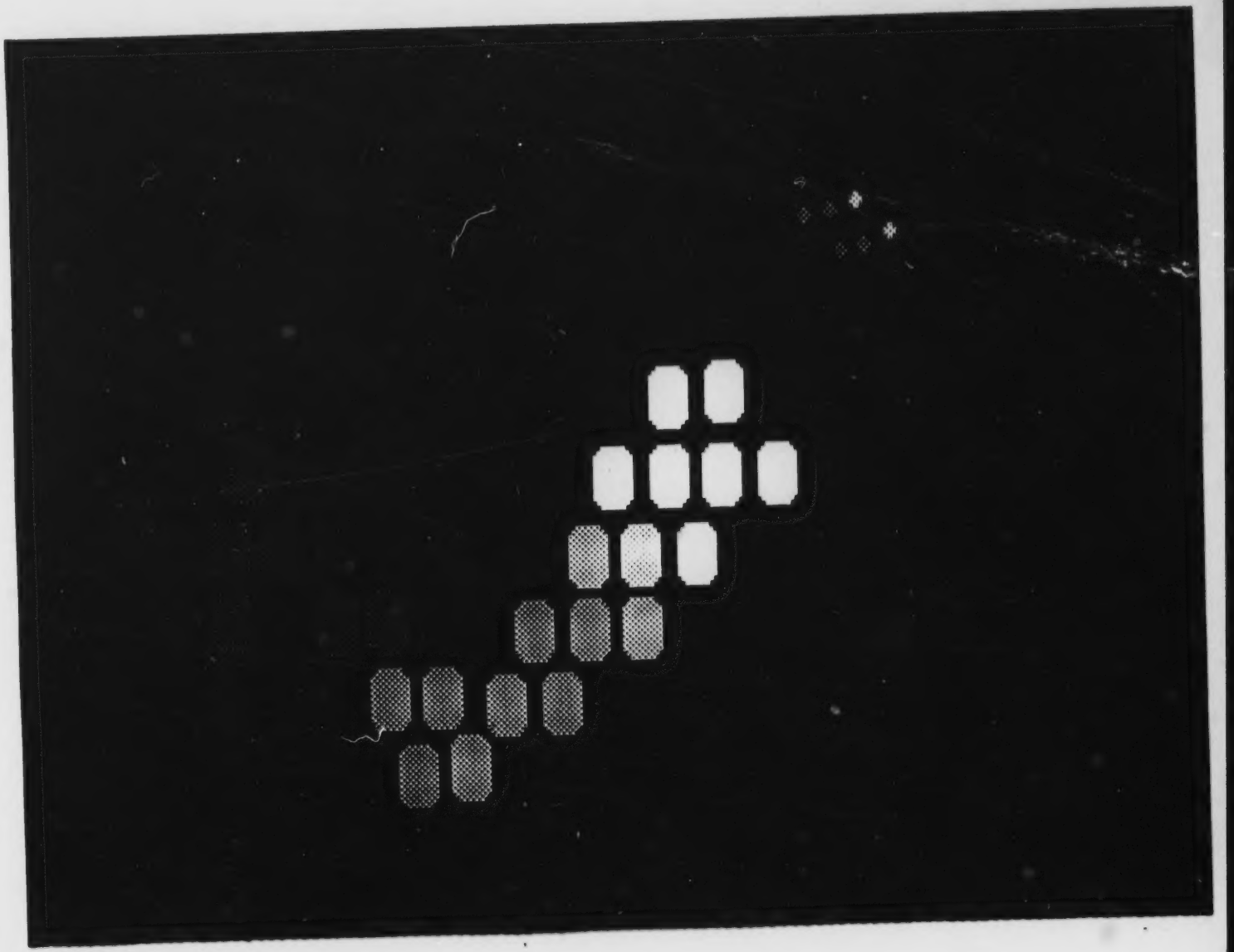
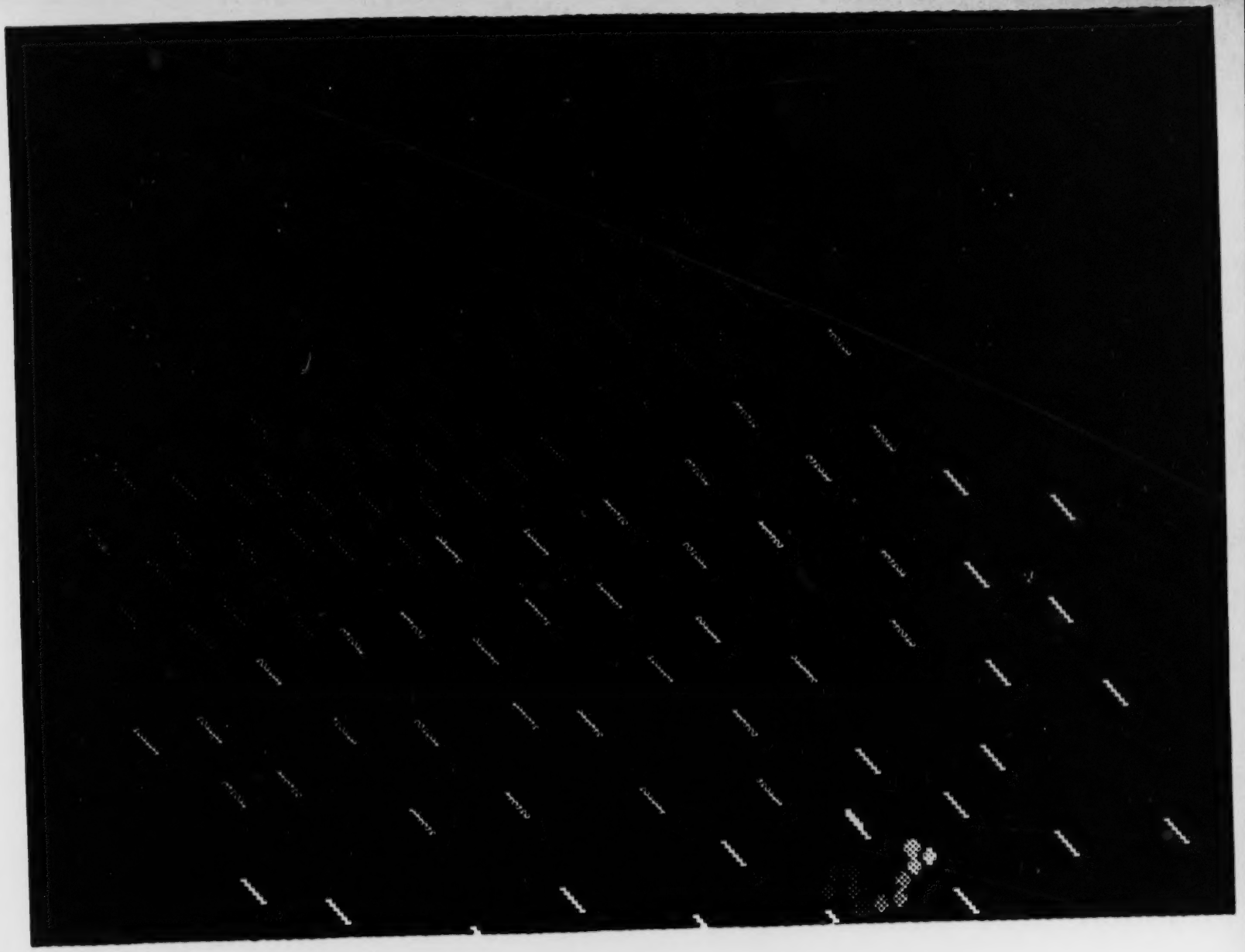
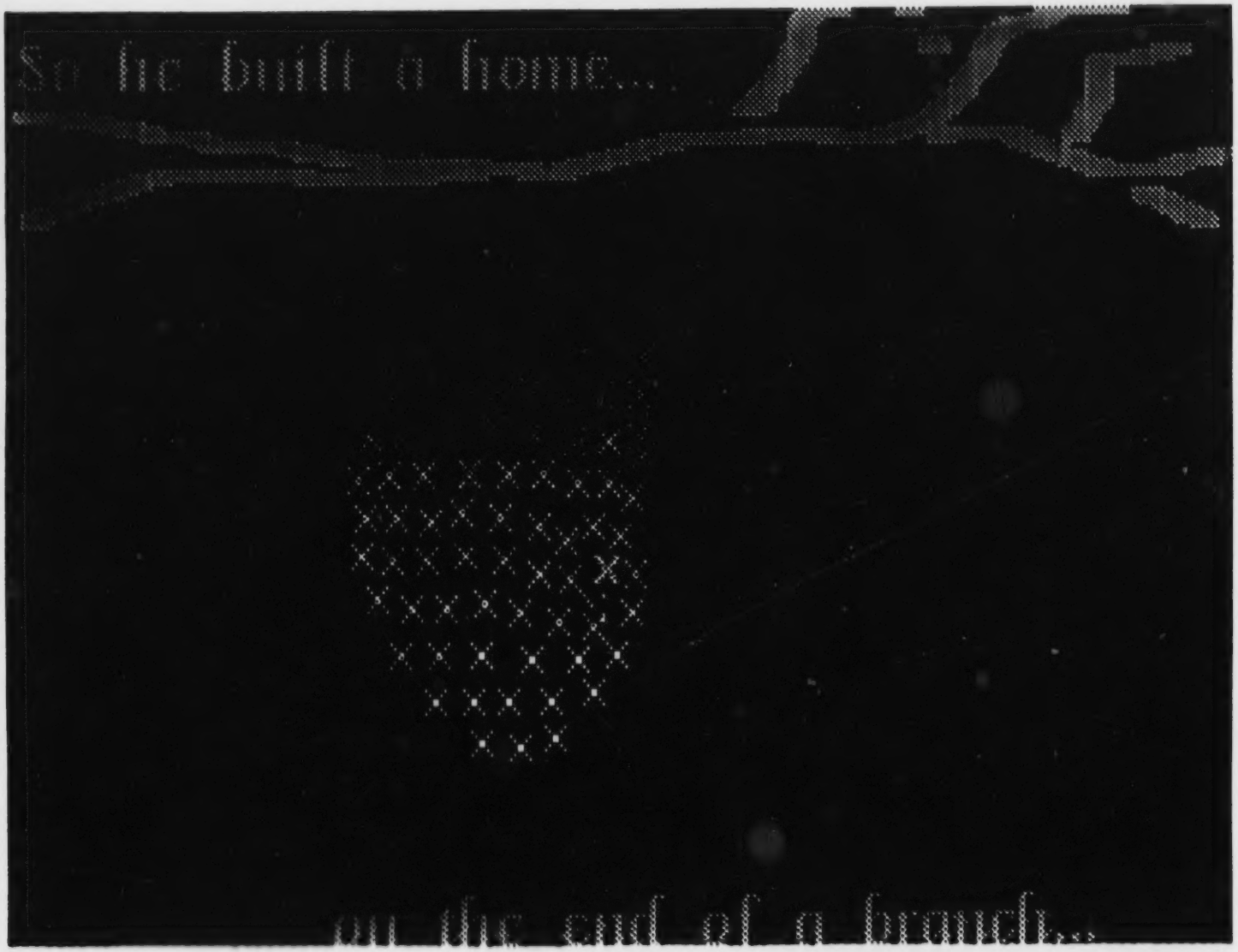


126

127





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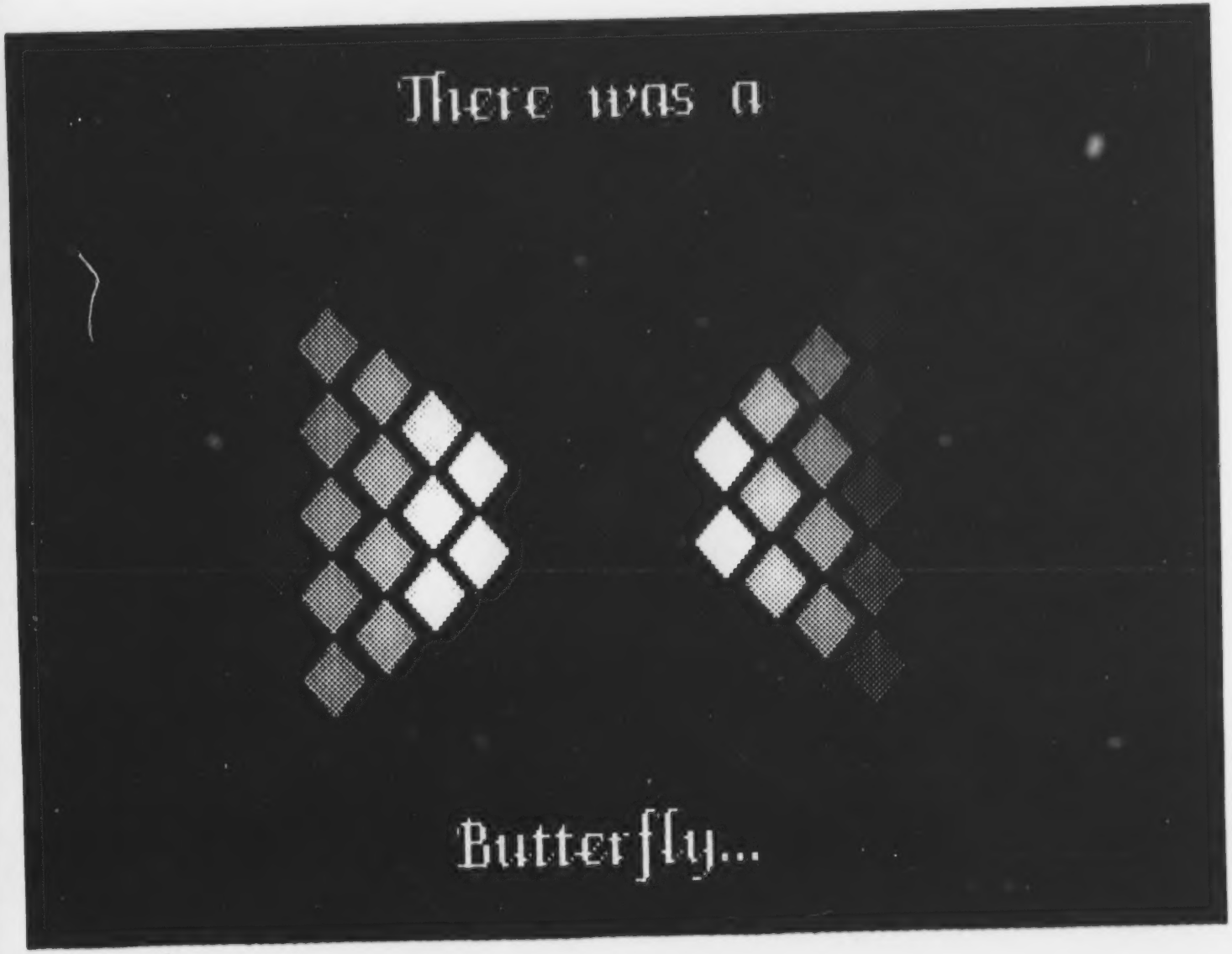
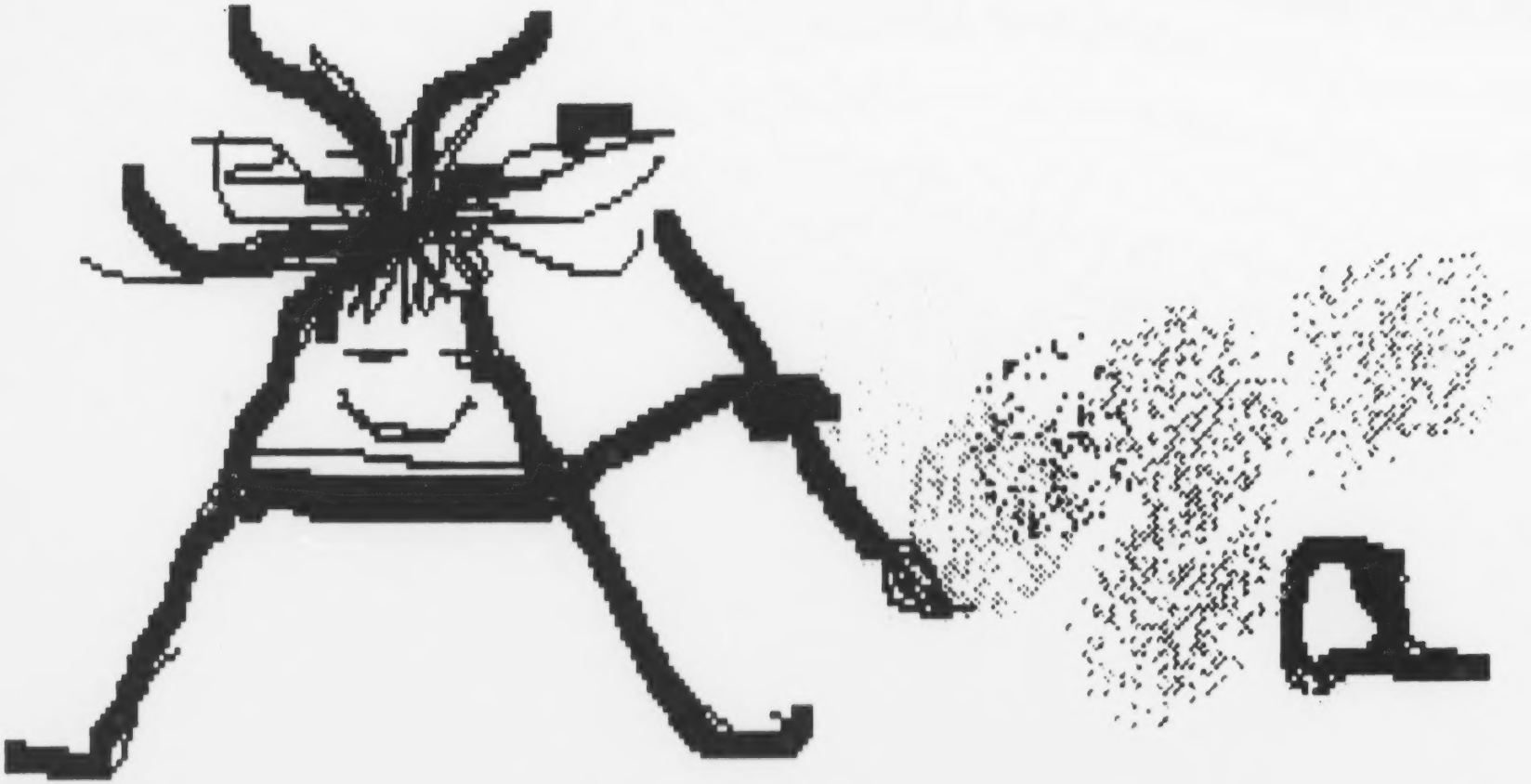

There was a
Butterfly...

b c d e f g h i j k l m n o p q r s t u v w x y z

a

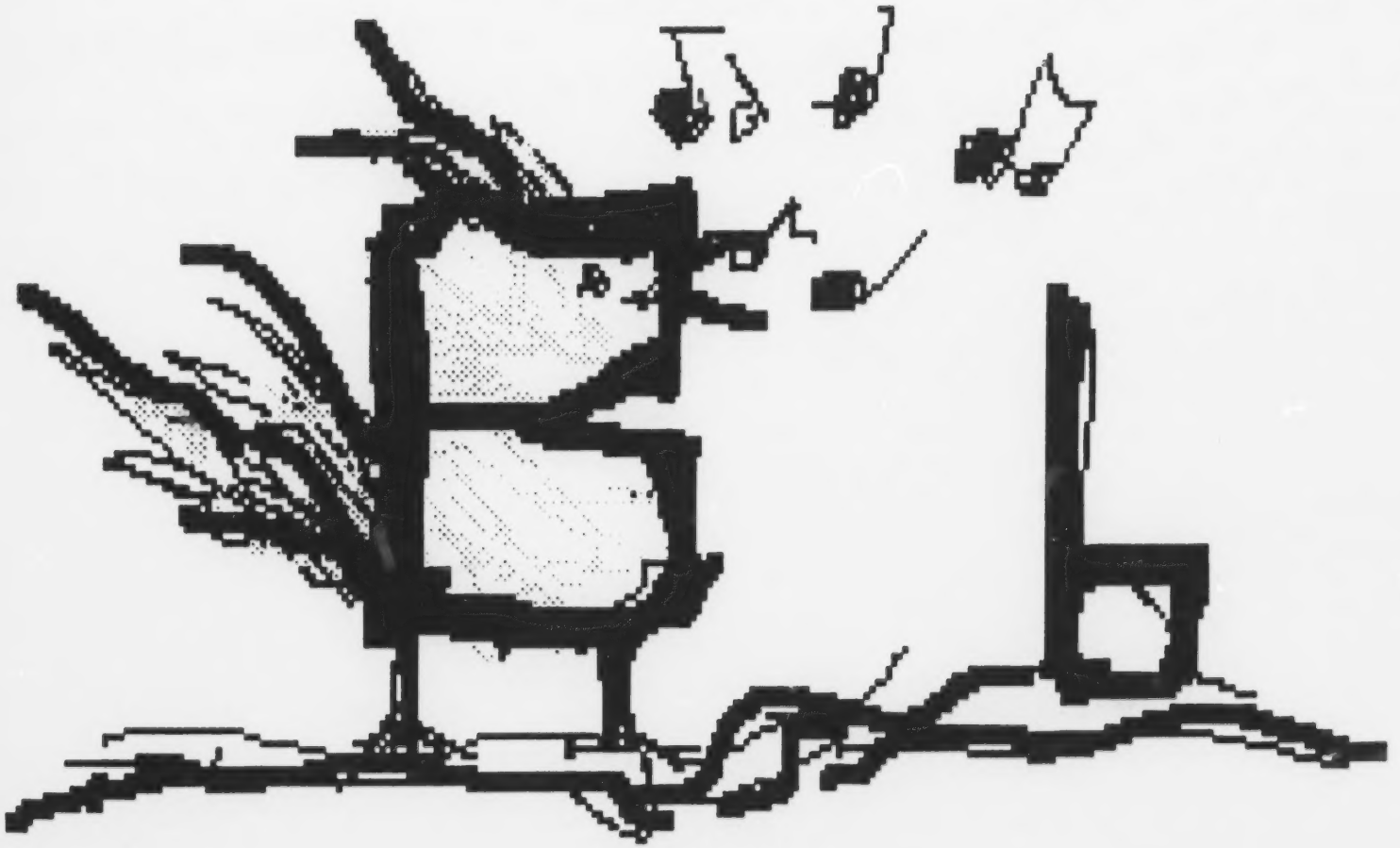
Alphabet Picture Book

BY SUZANNE GERMAINE



AAA is for Artist, as you can see.

Turn the page to get to B !



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Rhh is for Bird_ singing as you see ! Now turn to 3...

C

142

143

C is for clown, happy as can be. Now turn to page 4

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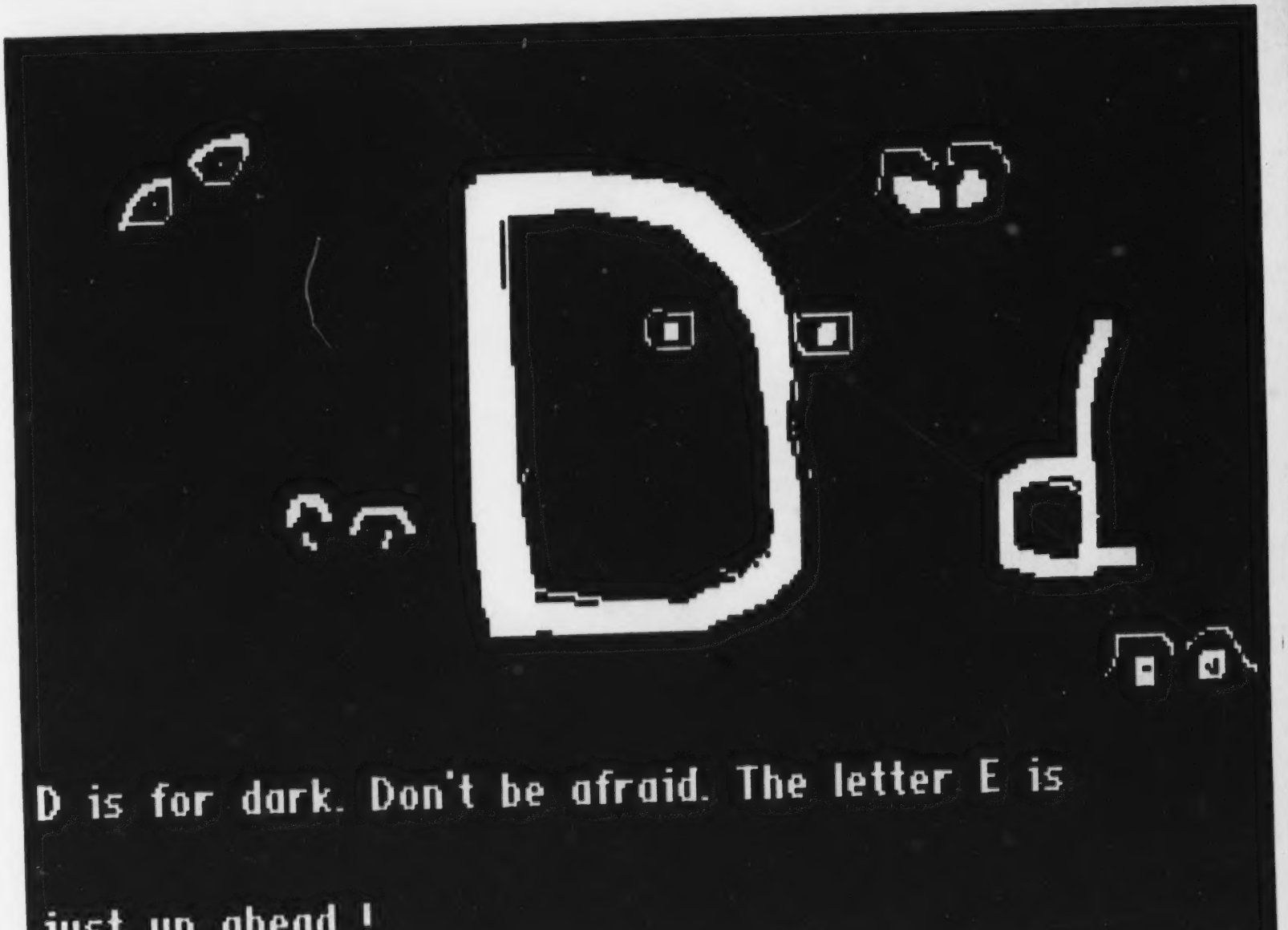
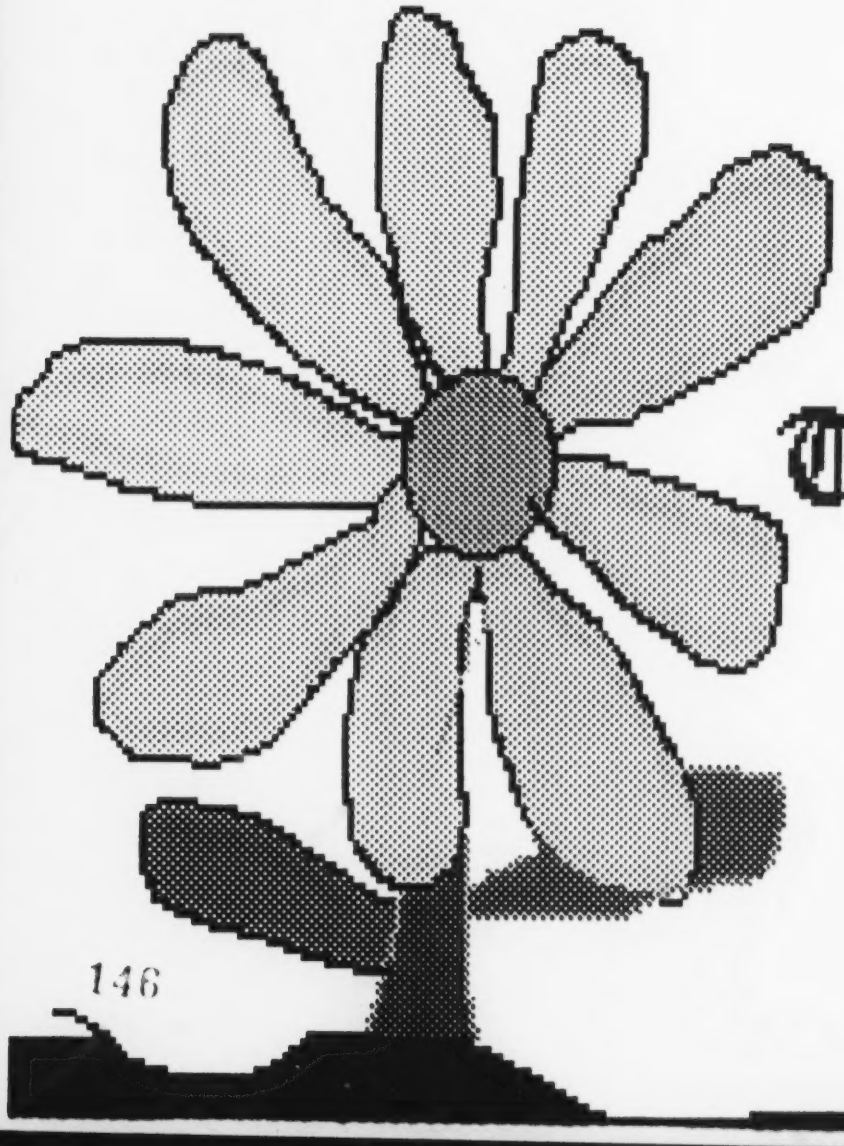
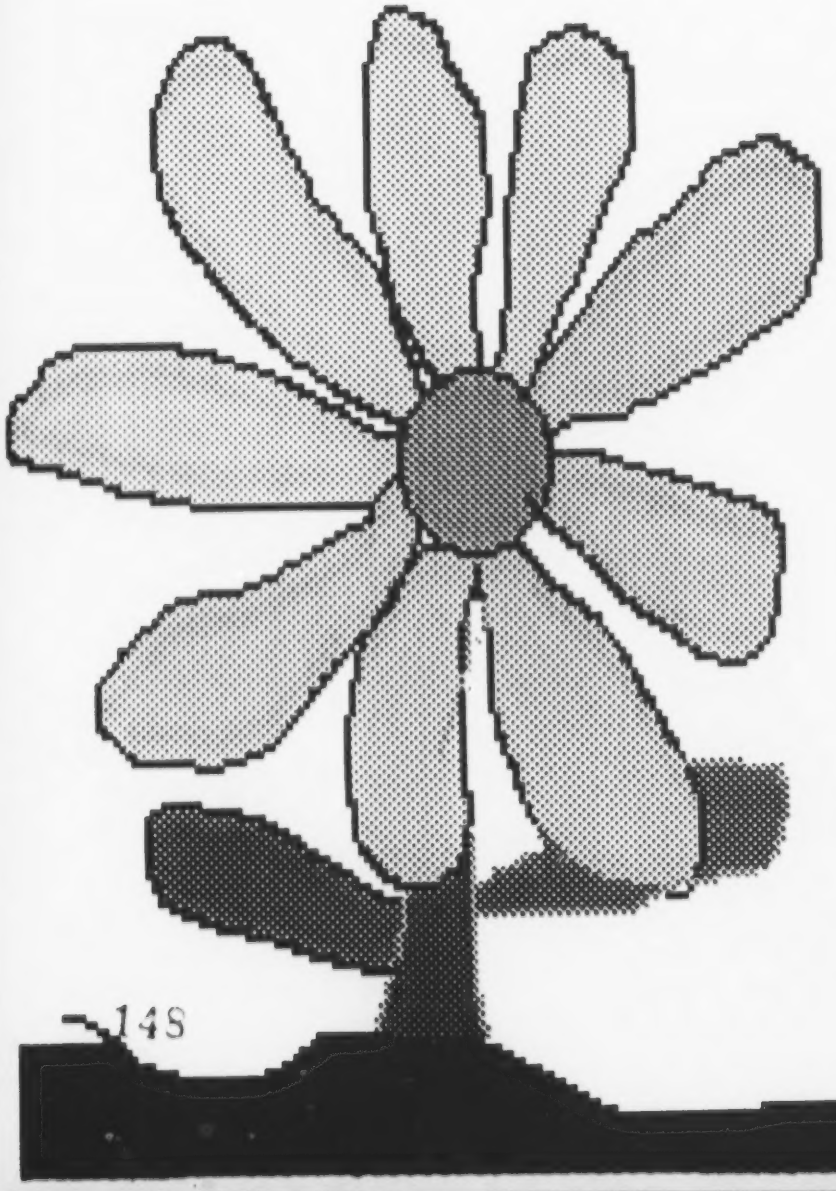

D is for dark. Don't be afraid. The letter E is
just up ahead !



The Little Flower

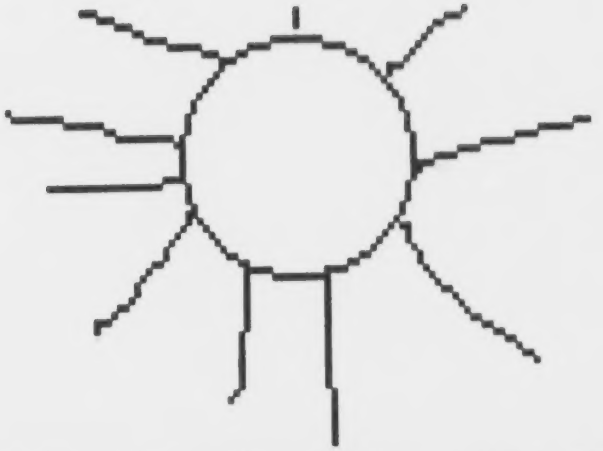
BY KEN ULRIC



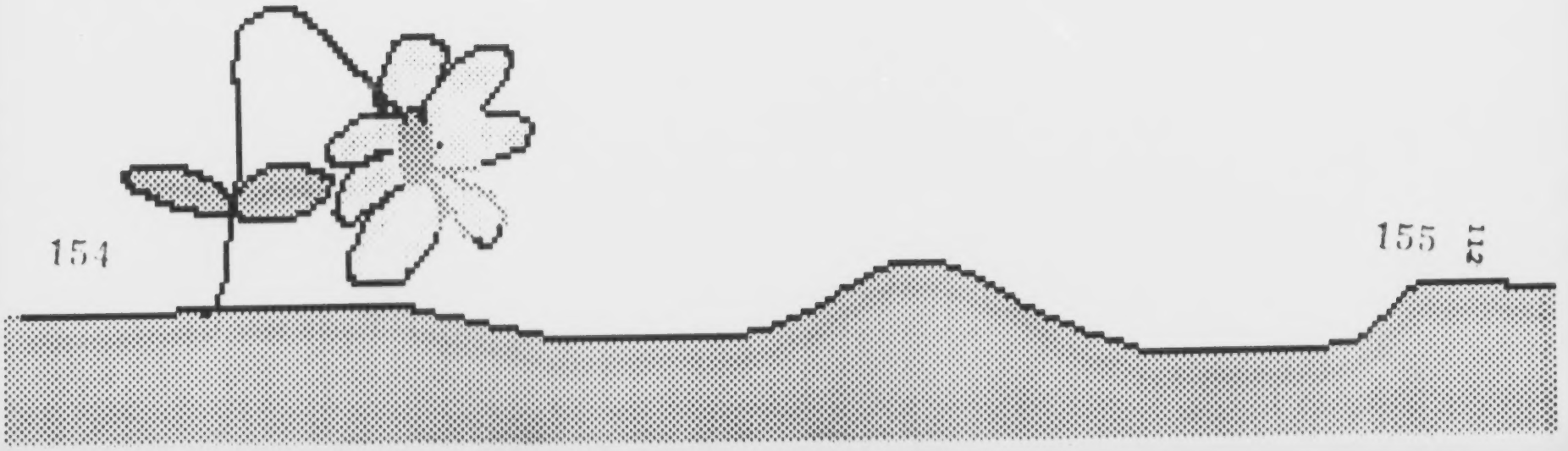
ONCE UPON A TIME THERE WAS A POORLY FORMED FLOWER THAT LOOKED LIKE IT SUFFERED FROM A GENETIC DEFECT.

IT WAS UGLY AND IT DROOPED LOW TOWARDS THE GROUND. IT NEEDED HELP VERY BADLY.

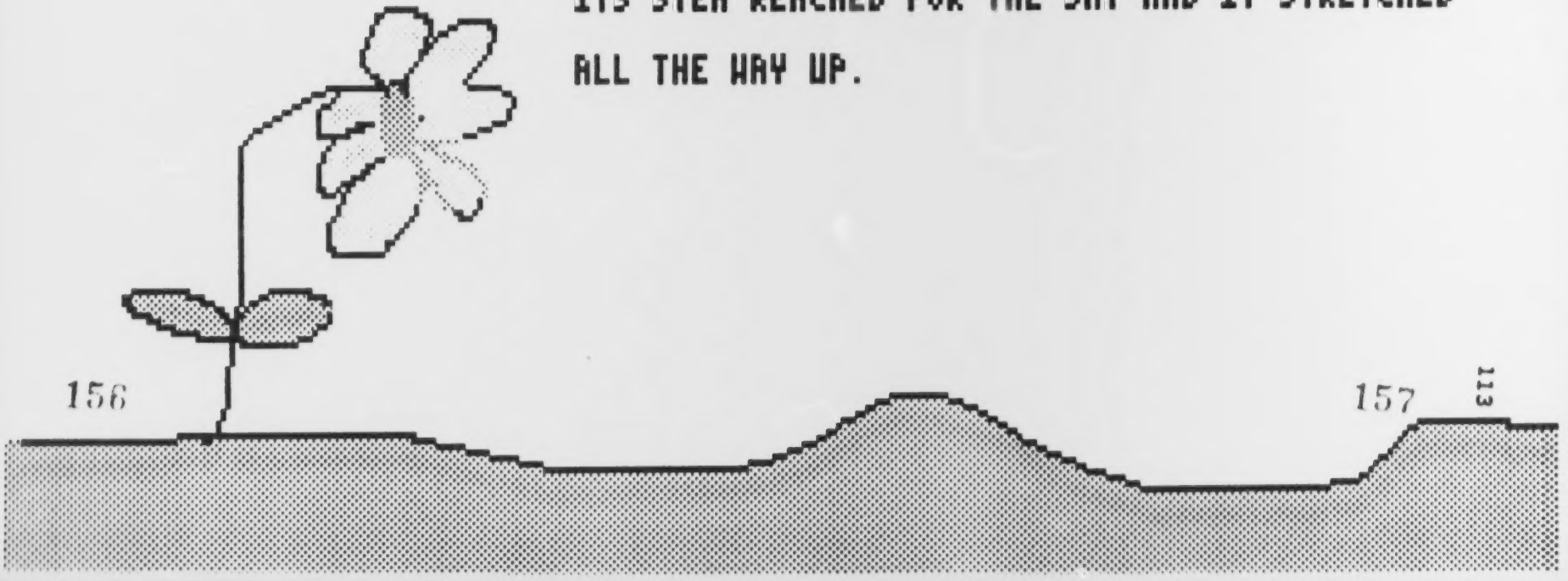
Days and weeks went by.
The flower only got worse.

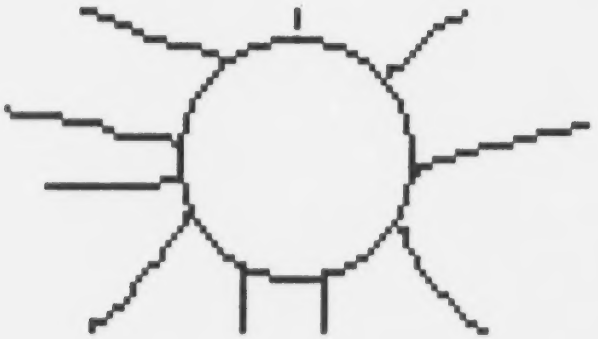


ONE DAY, THE SUN CAME OUT AND WARMED THE LITTLE FLOWER ALL OVER.



ITS STEM REACHED FOR THE SKY AND IT STRETCHED ALL THE WAY UP.





ITS STEM REACHED FOR THE SKY AND IT GREW AND GREW.

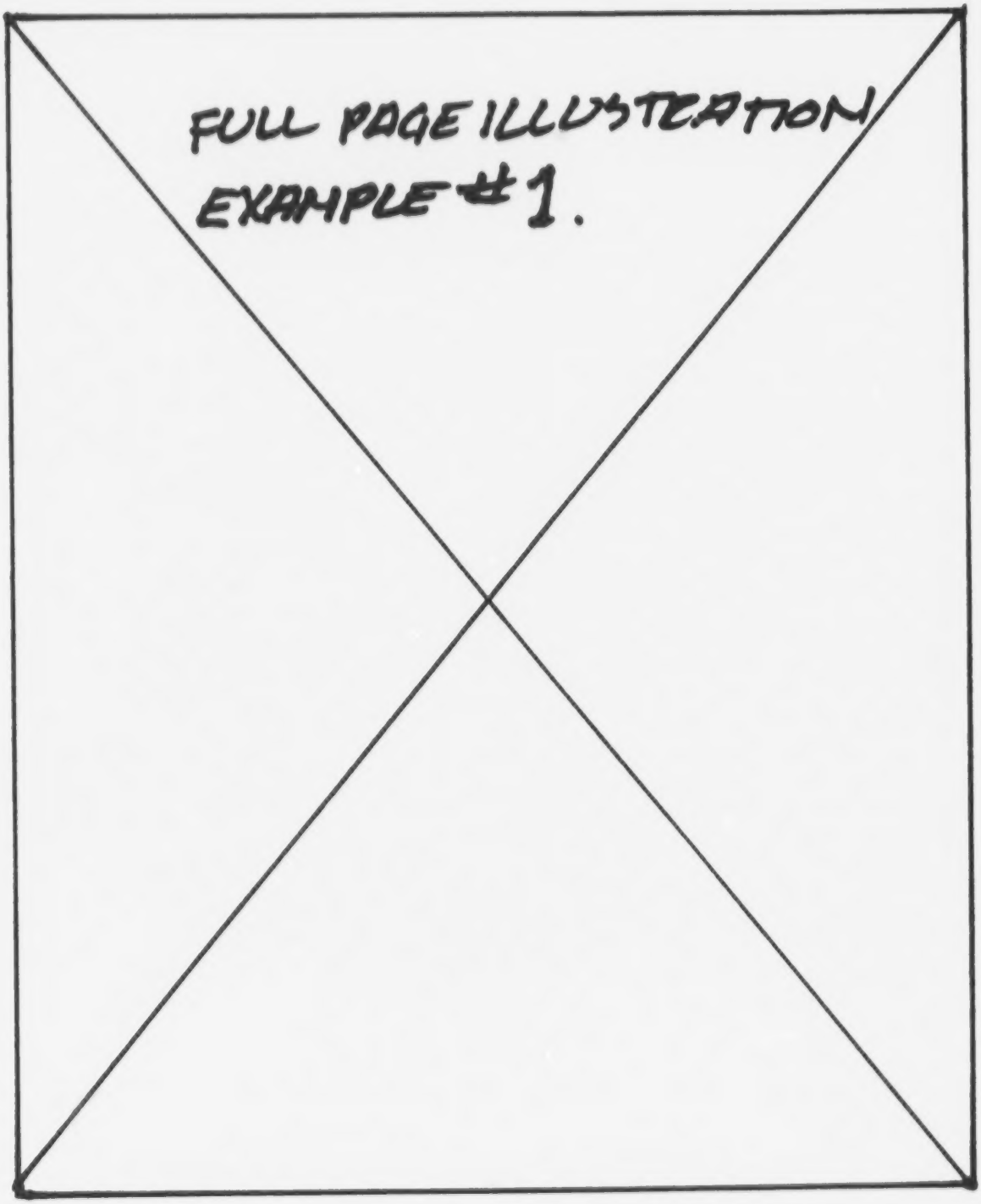
158

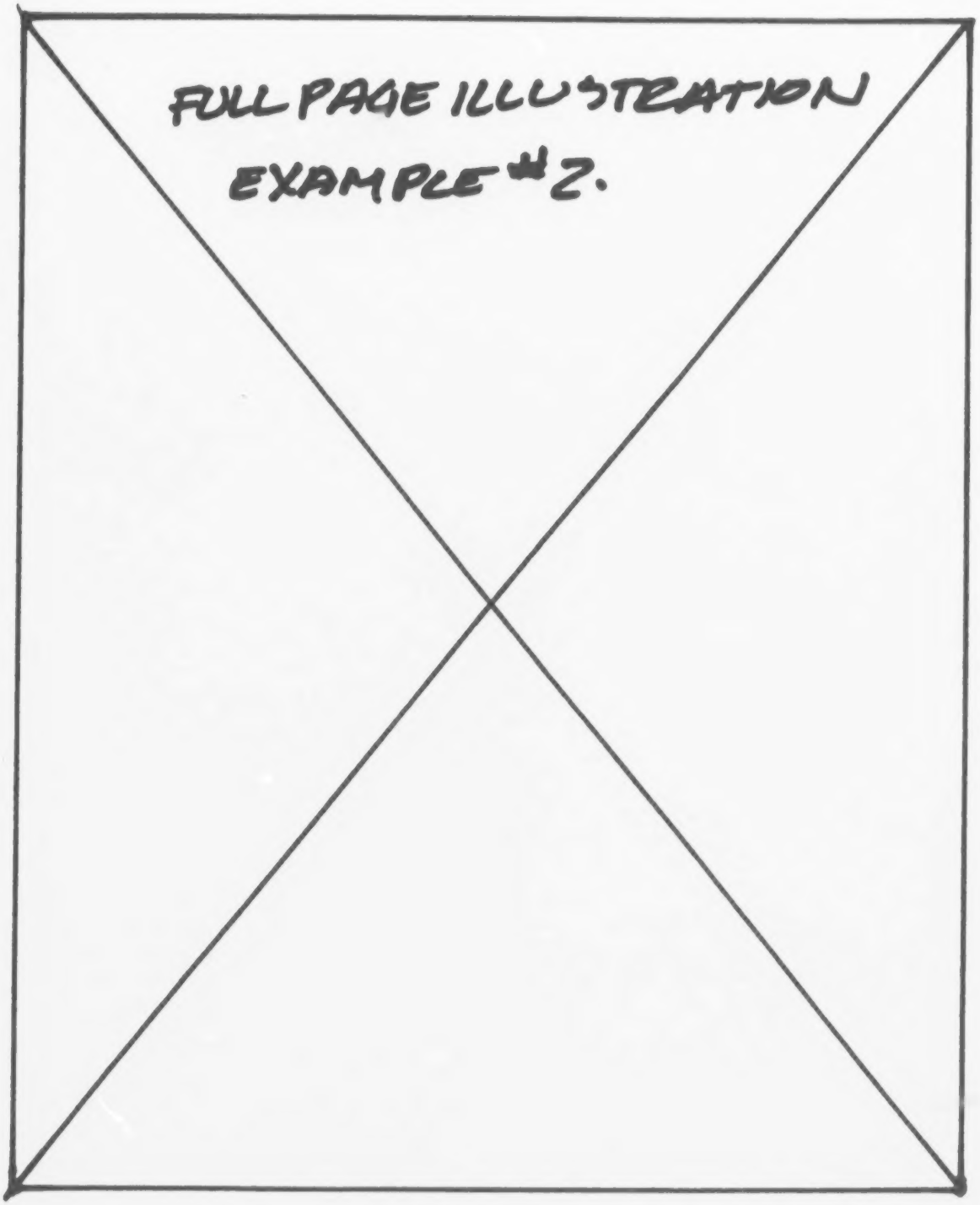
159

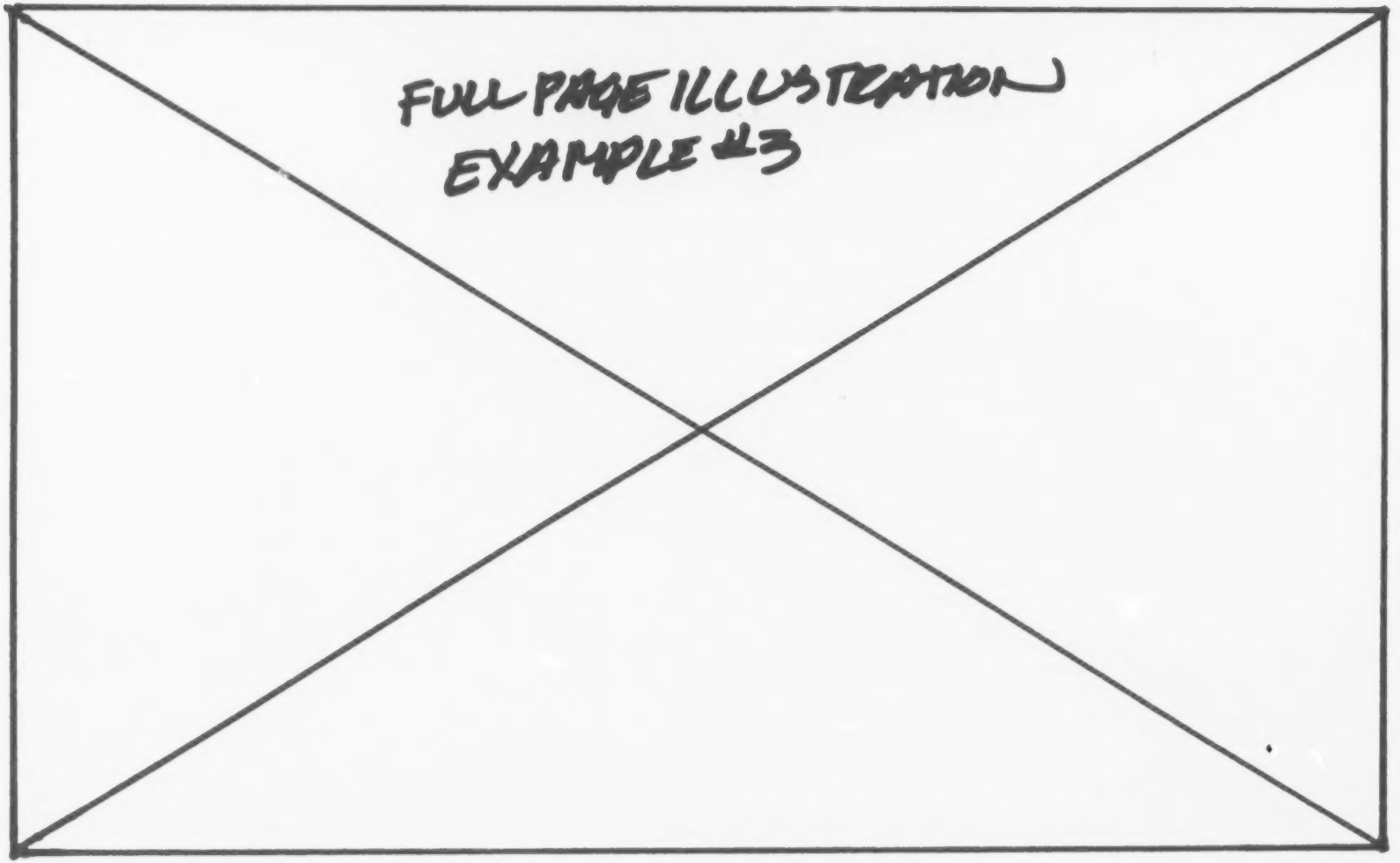
THE UGLY FLOWER HAD BECOME A BEAUTIFUL BLOOM.

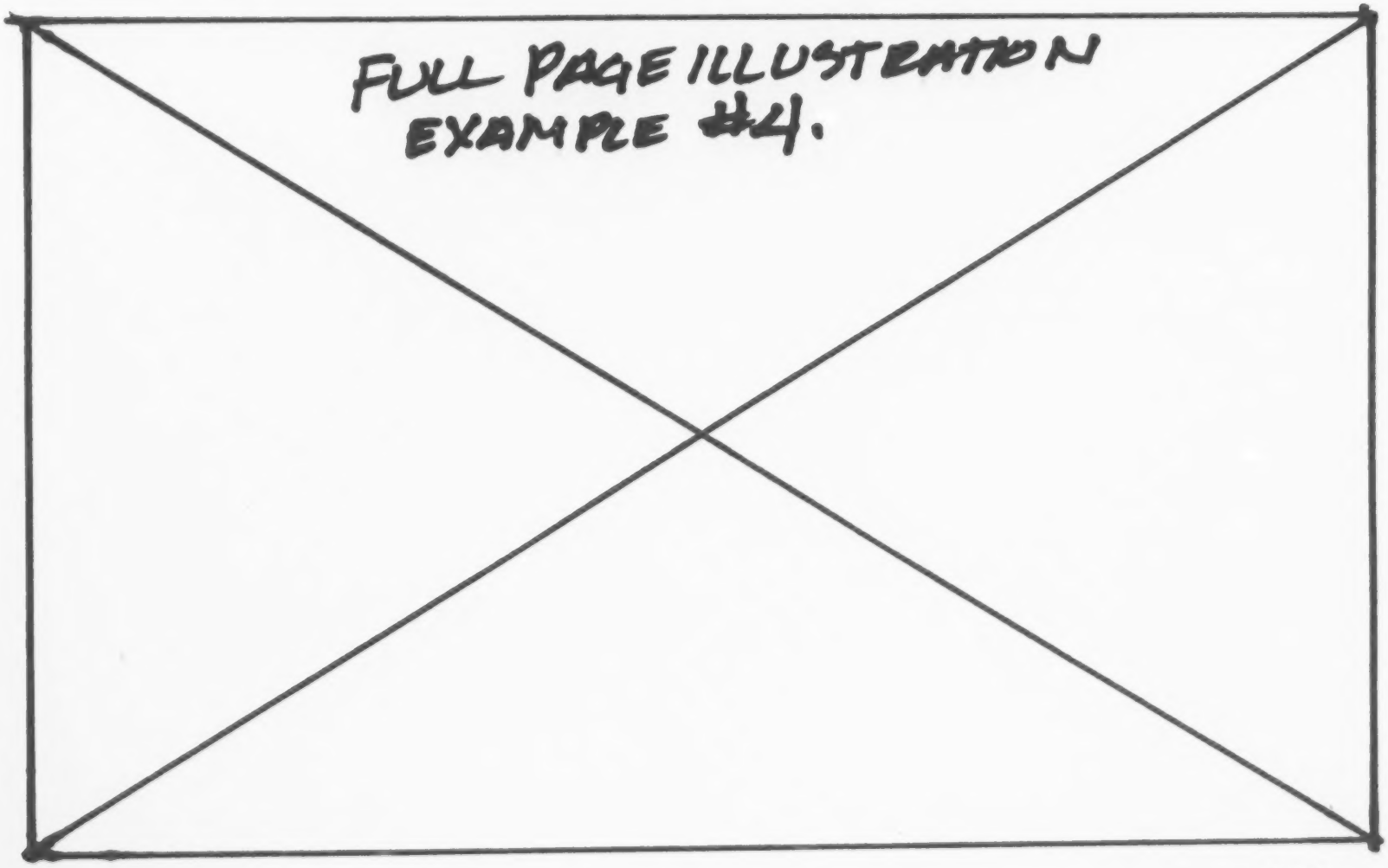
APPENDIX G

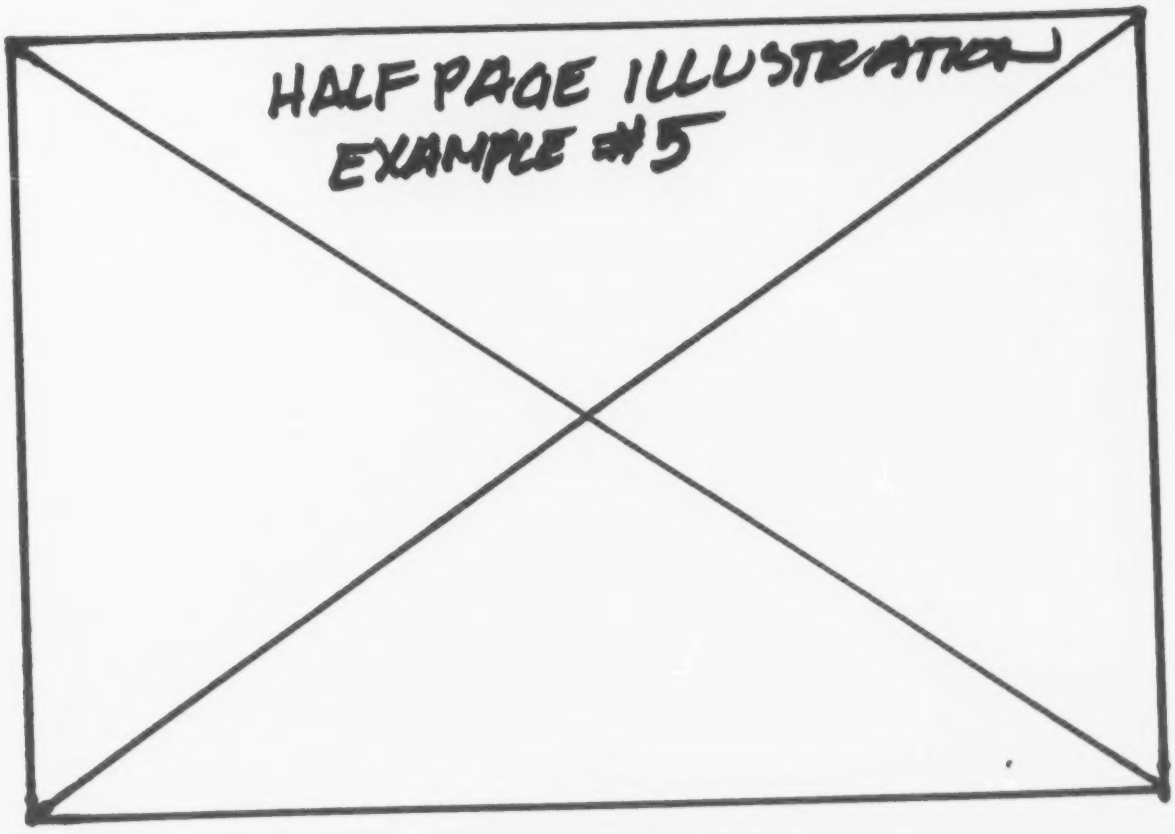
Pre-Design Layout Samples


FULL PAGE ILLUSTRATION
EXAMPLE #1.

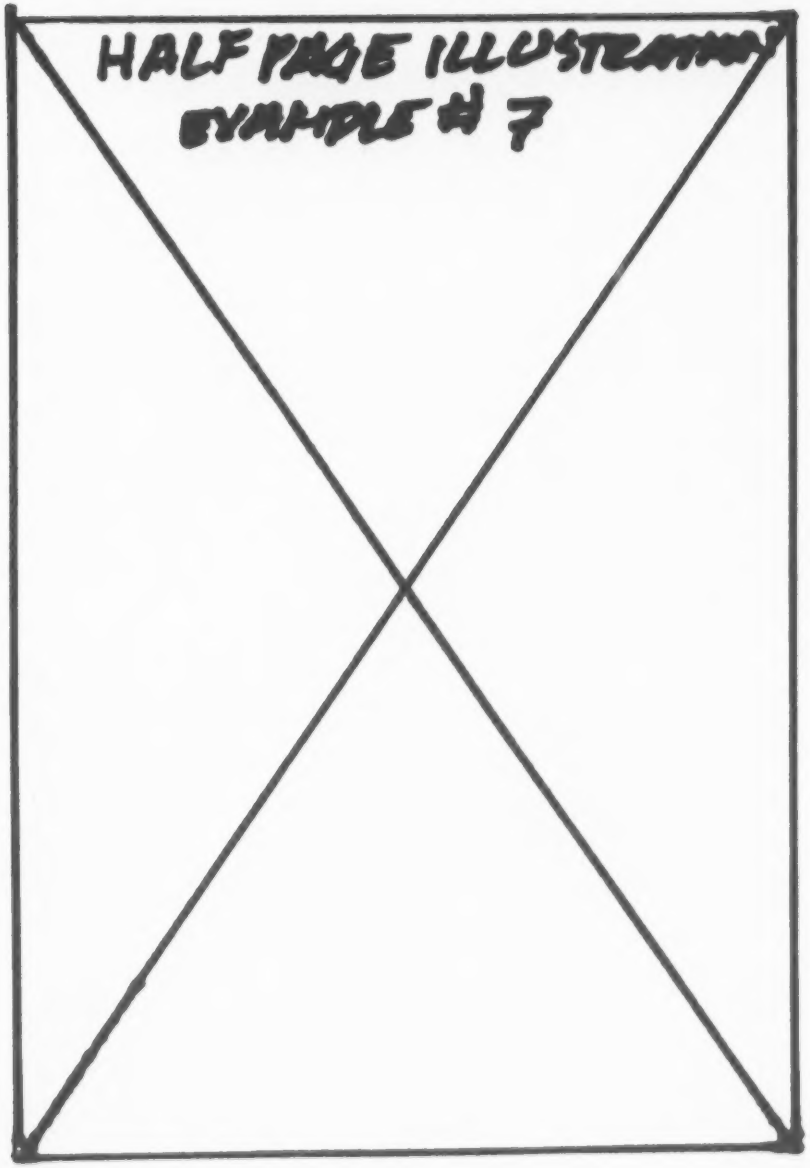

FULL PAGE ILLUSTRATION
EXAMPLE #2.


FULL PAGE ILLUSTRATION
EXAMPLE #3


FULL PAGE ILLUSTRATION
EXAMPLE #4.


HALF PAGE ILLUSTRATION
EXAMPLE #5

HALF PAGE ILLUSTRATION
EXAMPLE #6



171

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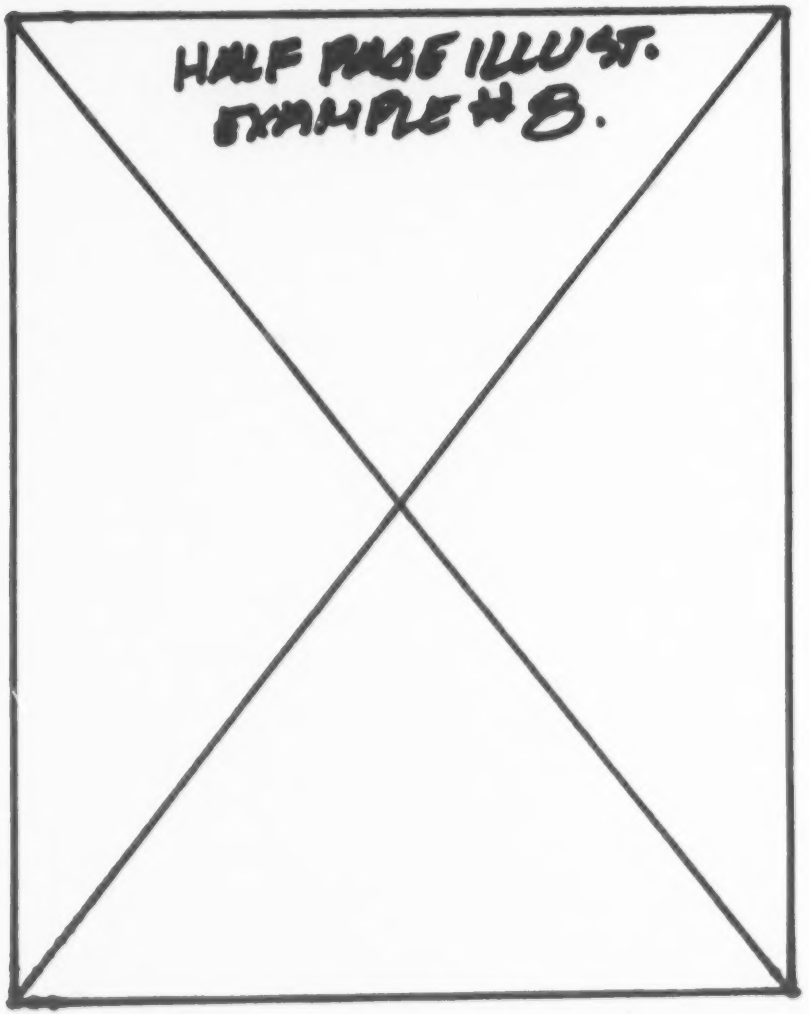
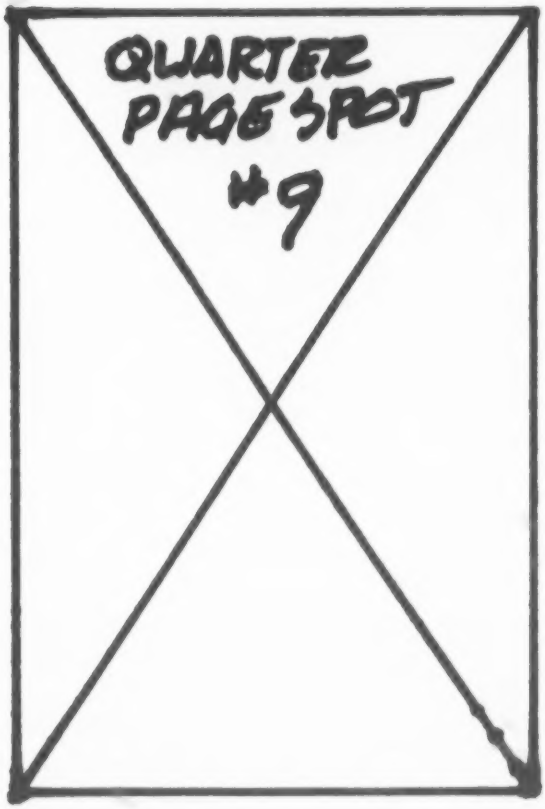
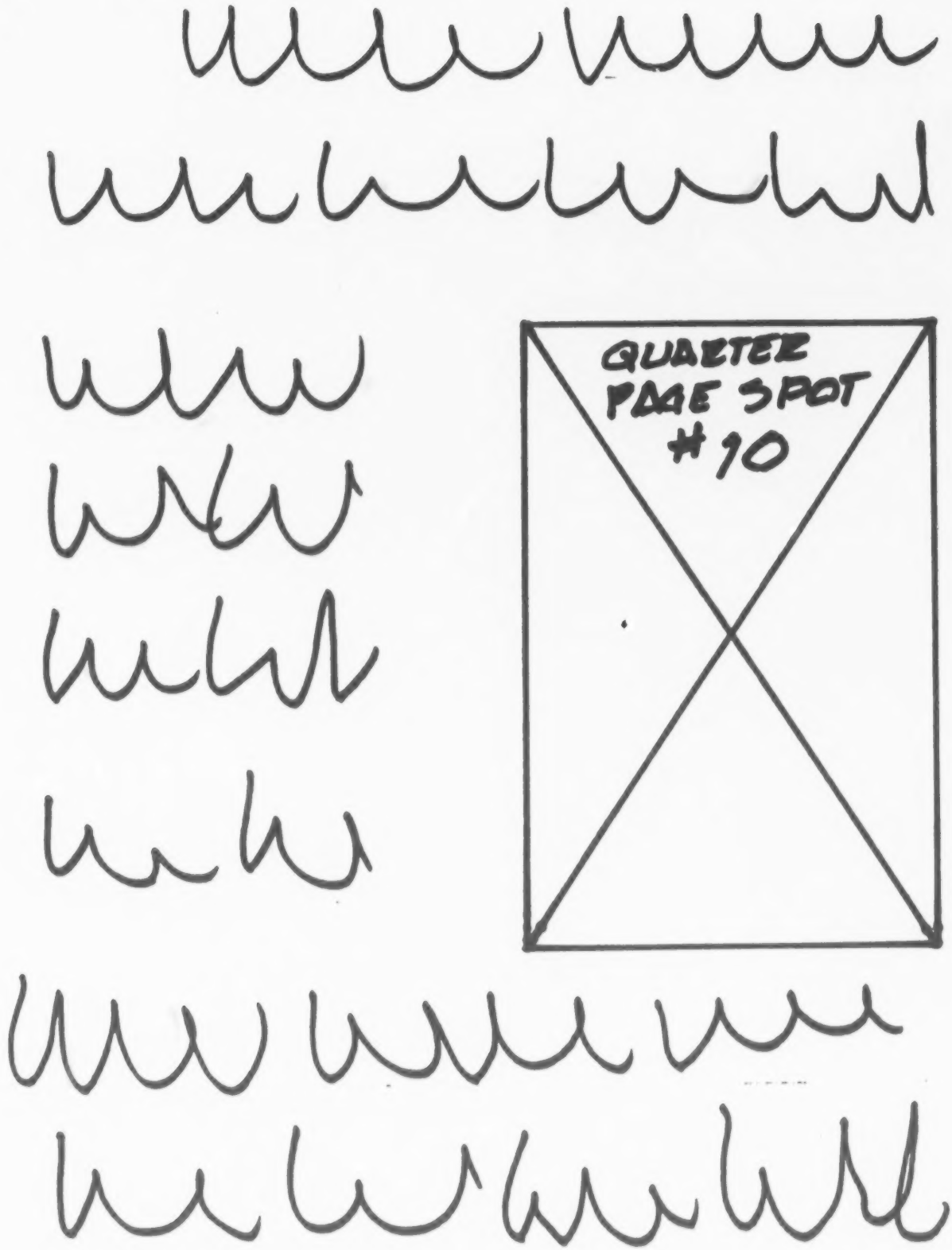

HALF PAGE ILLUST.
EXAMPLE #8.


QUARTER
PAGE SPOT
#9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PAGE SPOT
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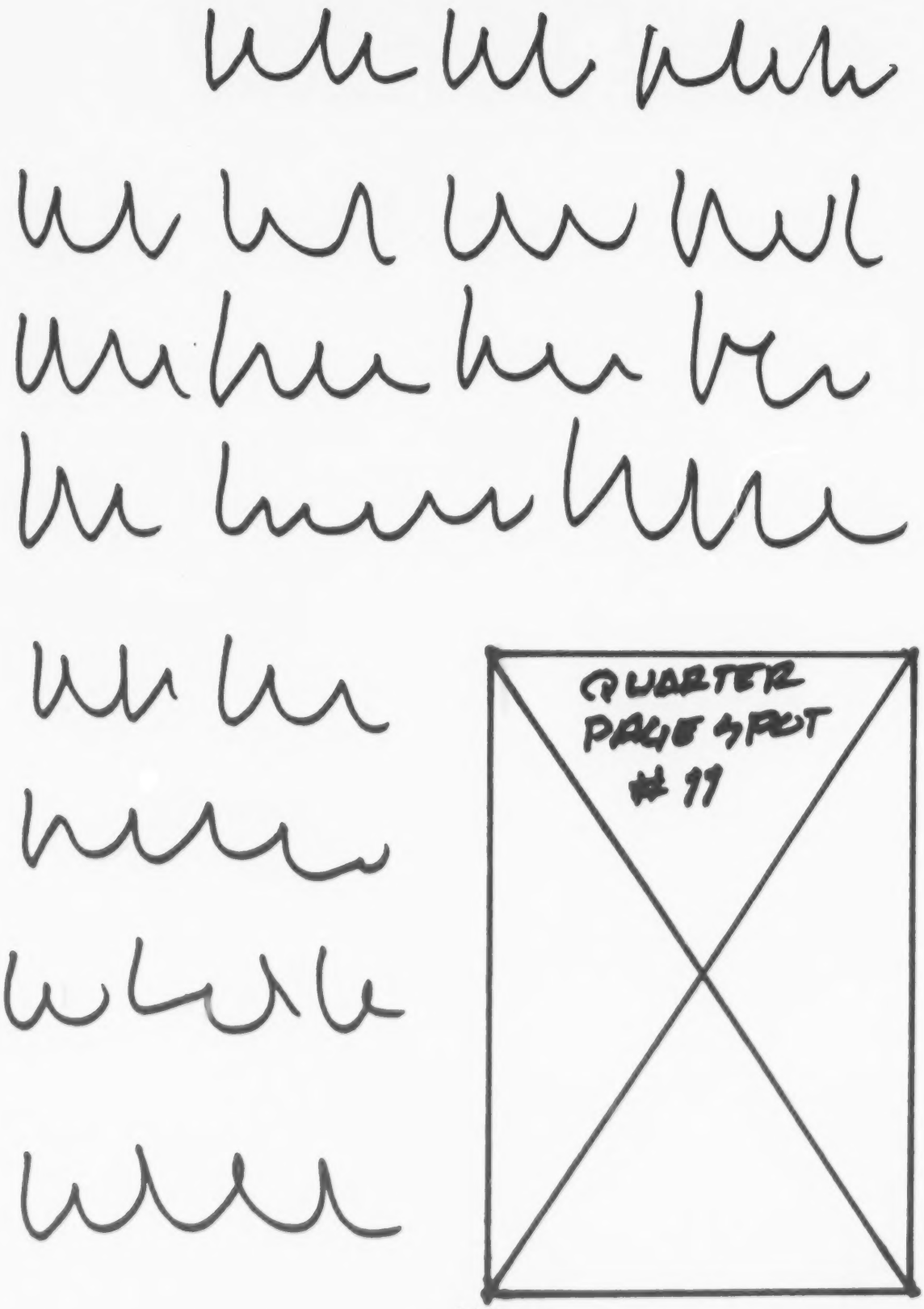
QUARTER
PAGE SHEET
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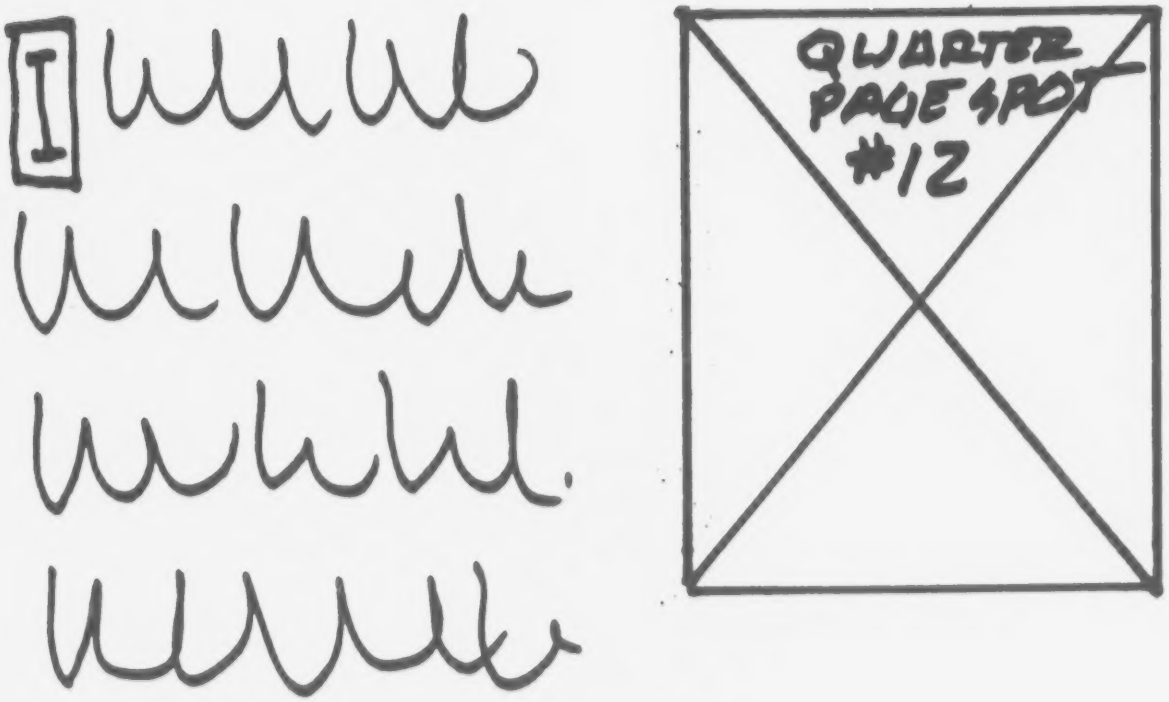
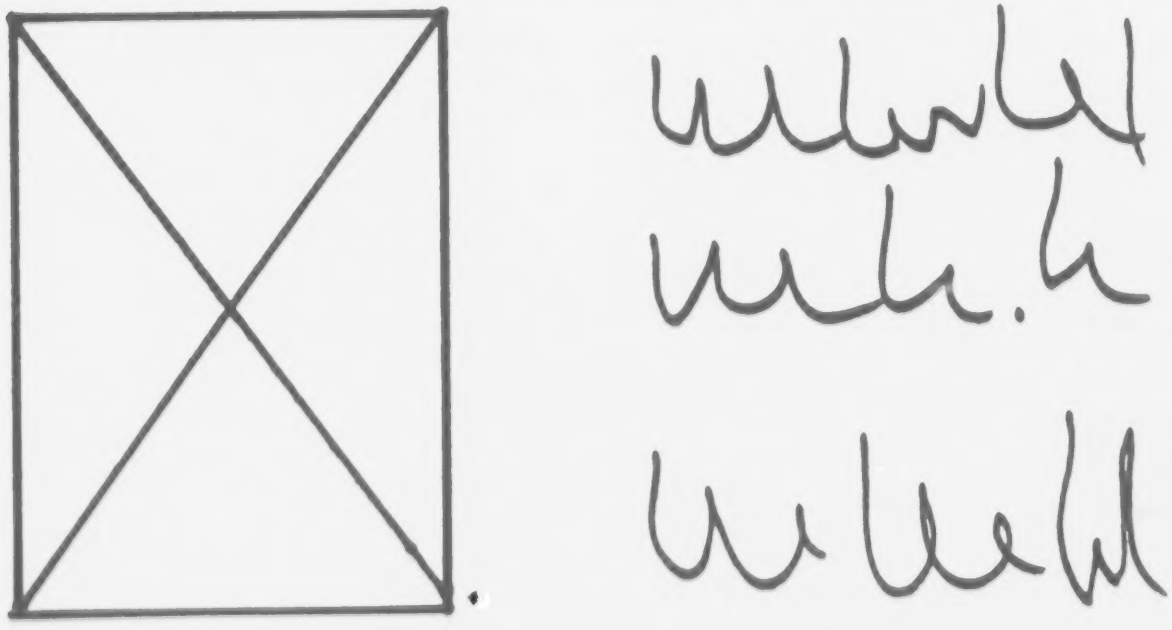

I
QUARTER
PAGE SPOT
#12



APPENDIX H

Entry Level Behaviors

APPENDIX H

Entry Level Behaviors

The level that established for the instructional module was that the student must be able to:

1. manipulate the mouse
2. access the file
3. display the appropiate professional benavior in a studio environment
4. display experience with the keyboard
5. read several children's storybook prior to course

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APPENDIX I

Evaluation Checklist

APPENDIX I

Mr. Buchholz

Evaluation Checklist

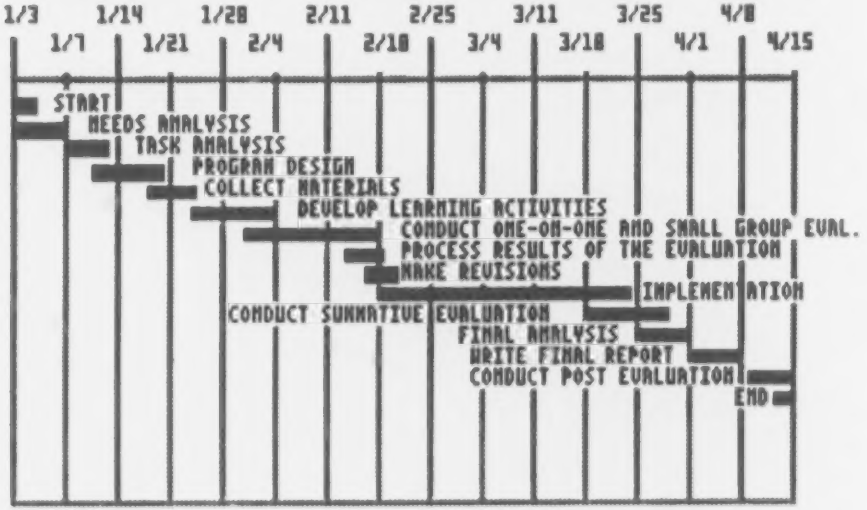
Student Name_____

	Pass	Fail
1. Manipulation of the computer mouse.	____	____
2. Accessing the file.	____	____
3. Write the story.	____	____
4. Design the story book page layouts on paper.	____	____
5. Convert sketches into the computer.	____	____
6. Print two copies of the story book.	____	____
7. Color the story book.	____	____
8. Bind the story book.	____	____

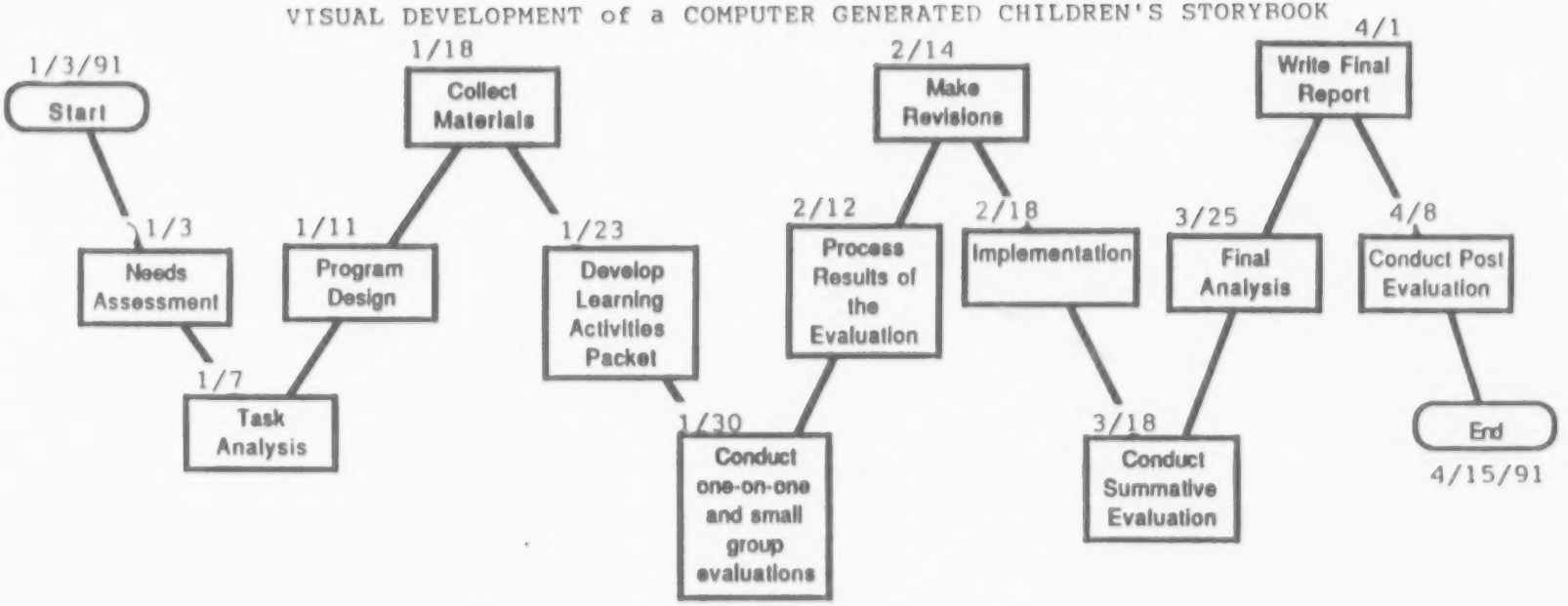
APPENDIX J

Project Planning

VISUAL DEVELOPMENT OF A COMPUTER GENERATED CHILDRENS STORY BOOK DEVELOPMENT PLAN



VISUAL DEVELOPMENT of a COMPUTER GENERATED CHILDREN'S STORYBOOK



APPENDIX K

Tasks

TASK	PERFORMANCE OBJECTIVE	TEST ITEMS
1.0 Manipulation of the mouse		
1.1 Roll mouse on mat.	Student must manipulate the mouse.	Teacher observation.
1.2 Drag mouse from x to y.	Student must drag mouse across the screen.	Teacher observation.
1.3 Click mouse on file.	Student must position arrow on file, click and hold.	Did student position on file. Y/N.
1.4 Double click on on a file.	Student must double click on a a file.	Did student find a file and double click. Y/N.
2.0 Accessing the file		
2.1 Position arrow on a file name.	Student must position arrow on a file name and release button.	Did student position on a file name. Y/N.
2.2 Closing file.	Student must position arrow on file, drag to "save as", release button.	Did student perform. Y/N.
3.0 Writing the story		
3.1 Write main theme.	Student must write a main theme to a short story.	Did student write main theme. Y/N.
3.2 Write concise sentences.	Student must write concise sentences.	Did student write. Y/N.
3.3 A. Write introduction.	Student must write an introduction to a short story.	Did student write an introduction. Y/N.
3.3 B. Write body of a story.	Student must write the body of a short story.	Does story develop from introduction Y/N.

TASK	PERFORMANCE OBJECTIVE	TEST ITEMS
3.3 C. Write conclusion to the story.	Student must write a conclusion to the story.	Does the conclusion fit the story. Y/N
4.0 Designing the book		
4.1 A. Cut Book cover to 9x12"	Student must cut cover stock to 9x12" size.	Is cover size exactly 9x12". Y/N.
4.1 B. Use four colors.	Student must use at least four colors in book cover design.	Did student develop a cover with four colors. Y/N.
4.1 C. Use type contained in the computer	Student must use type styles accessed in the computer.	Are the type styles contained in computer. Y/N.
4.2 A. Cut fly sheet to 8 1/2 x11".	Student must cut down fly stock down to 8 1/2x11".	Is fly size exactly 8 1/2x11.
4.2 B. Match fly color to theme in story.	Student must use coordinate story colors with fly sheet.	Did student coordinate colors with fly. Y/N.
4.3 A. Body of story on six pages.	Student must use six pages in story book.	Did student use six. pages. Y/N.
4.3 B. Body copy pages are 8 1/2x11".	Student must cut body copy pages down to 8 1/2x11".	Are all body copy pages 8 1/2x11". Y/N.
4.4 Illustration sizes are: one full page, two 1/4 page, 3 1/2 page.	Students must make illustrations exactly: 1 full page, 2 1/4 page, 3 1/2 page.	Are size specs exact Y/N.

TASKS	PERFORMANCE OBJECTIVES	TEST ITEMS
5.0 Printing the book		
5.1 Print two copies of story.	Student must make two copies of their story.	Did student make two printouts. Y/N.
6.0 Coloring the book		
6.1 Color book in pencil or marker.	Student must color one book in pencil or marker.	Did student color one book. Y/N.
7.0 Binding the book		
7.1 Glue book together.	Student must glue all parts of book together, neatly.	Is book glued together, neatly Y/N.
7.2 Produce one color and one black and white book.	Student must turn in two books one color, one black and white.	Did student produce two books: 1 B&W 1 color. Y/N.

APPENDIX L

STUDENT RESPONSE SURVEY SHEET

Appendix L

STUDENT EVALUATION OF
COMPUTER GRAPHICS

Please circle the answer which best desrcibes your own reaction. You do not need to write your name on this response sheet. Any written responses must be placed at the bottom or back of this sheet, additional paper is available if required.

1. What section of the project did you enjoy most?
   a. sketches b. designing c. composition d. binding

2. What section of the project needs to be revised?
   a. sketches b. design c. checklist d. none

3. Was the performance checklist helpful as a guide?
   a. yes b. no

4. Was the pre-test needed to demonstrate learning?
   a. yes b. no

5. Did the Kid Writer Program help with computer learning and story ideas?
   a. yes b. no

6. Do you believe the information taught in this class will be useful toward your future?
   a. yes b. no c. undecided

7. Did you enjoy learning with the computer?
   a. yes b. no

8. Any comments about the program you would like to make may be written below or on the back of this sheet.

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